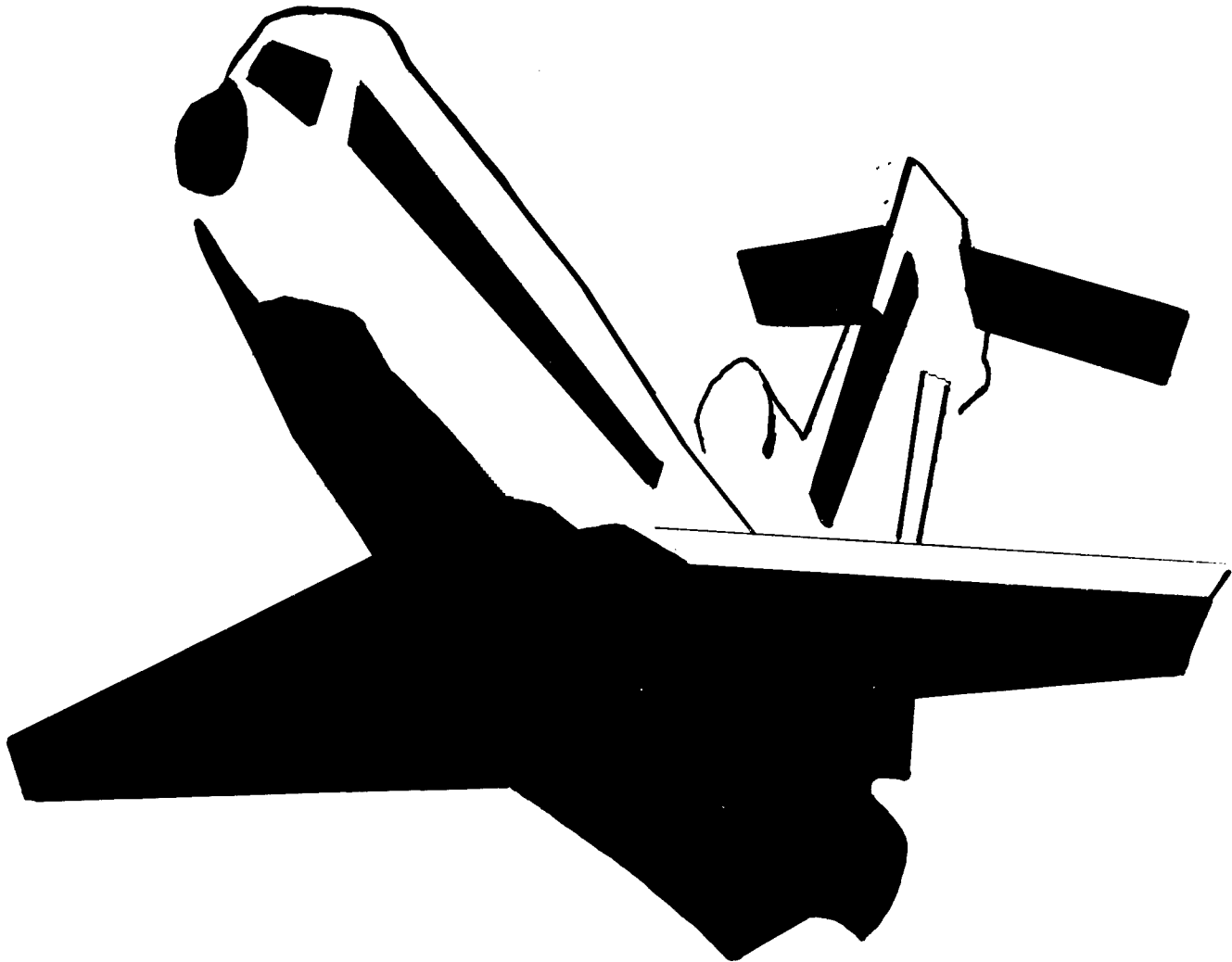




**U.S. Department of
Transportation**

Office of the Secretary
of Transportation

Secretary's Task Force on Competition in the U.S. Domestic Airline Industry



**INDUSTRY AND ROUTE STRUCTURE
Volume I
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**SECRETARY'S TASK FORCE ON
COMPETITION IN THE U.S.
DOMESTIC AIRLINE INDUSTRY**

Industry and Route Structure

Volume I

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INTRODUCTION

This analysis, which focuses on the domestic airline industry structure and service, is one of a series of studies which are intended to provide an information base to: 1) assess the state of competition in the domestic airline industry, and 2) develop policy options for maintaining the competitive benefits of deregulation. It is designed to be both a source document, providing detailed information on the state of service competition in the domestic industry, and an analytical study. This study addresses the state of domestic service competition in general and specifically analyzes service competition at hub airports.

The structure of the domestic airline industry has changed dramatically since 1978. The early years saw many new carriers enter the business but this peaked around 1984. Since then the industry has experienced a period of consolidation due to mergers, acquisitions and carrier failures. Today, based on carrier shares of the total domestic market, the airline industry is actually somewhat more concentrated than it was in 1978. An equally significant structural change has been the accelerating shift in recent years from primarily linear and point-to-point route patterns, a legacy of the regulatory era, to the almost universal use of hub and spoke route systems which use coordinated groups of connecting flights at a central point to provide one stop, same carrier service to a large number of city-pair markets.

While industry consolidation and "hubbing" have worked to create fewer carriers and the dominance of one, or in a few cases two, carriers at some large and medium hub airports, these changes have also transformed what were formerly regional carriers into coast-to-coast carriers which serve many more points throughout the nation than they did previously. Through hub and spoke systems many more city-pair markets are served more effectively, with greater frequency, and by competing carriers serving these markets with connecting flights over different hubs.

Because these changes have been so pervasive and have affected all points and city-pair markets, both large and small, simply looking at any one aspect of the industry, such as hub concentration, can be misleading. For this reason this study has developed both comprehensive data on industry structure and more detailed analyses of service levels and competition at individual hubs.

To assess the state of competition, data for 1988 ^{1/} were analyzed and compared to data for 1979 and 1984. Data for 1979 largely reflect the state of the industry and route structure as put in place during the era of regulation. Data for 1984 reflect the

^{1/} Most of the exhibits are based on data for the 12 months ended September 30, 1988. The computer program created in conjunction with the Office of Aviation Information Management (OAIM) of RSPA can be used to update information as needed.

period when the number of competing carriers was the greatest and when hub and spoke systems were not yet the industry norm.

The study is divided into two parts; there are also several appendices. Part I primarily involves the presentation of data which are descriptive of the structure and competitiveness of the domestic industry, covering service levels, competition (particularly among major carriers) and concentration.

Part II provides an in-depth analysis of hubbing, covering: how hubbing works, the service effects of hubbing, the competitive effects of hubbing and an analysis of how hubbing affects load factors. An understanding of the airline industry today requires an appreciation of why hub and spoke systems have developed.

Part II also provides much more detailed information, in some cases analyzing service at specific points and in specific markets to provide insight into how the system is working today and where the competitive problems may lie.

Summary of Findings

The analysis of domestic industry data in Part I provides some clear-cut conclusions regarding the structure of the domestic airline industry today:

- o Carrier concentration at the national level declined and then increased over the past decade. For example, the top ten carriers accounted for 85 percent of the domestic revenue passenger miles in 1979, 78 percent in 1984, and 94 percent in 1988.
- o Carrier concentration at large and some medium FAA hubs has clearly increased since both 1979 and 1984. 1/
- o Concentration at small FAA hubs and many non-hubs has declined significantly.

1/ The FAA assigns domestic cities hub classifications based on their percent of total domestic enplaned passengers -- large hubs (1.00 percent or more), medium hubs (0.25 to 0.999 percent), small hubs (0.05 to 0.249 percent) and non-hubs (0.05 to 0.249 percent) and non-hubs (less than 0.05 percent). These FAA classifications should not be confused with the term "connecting hub", which refers to an airport in a hub and spoke system where a carrier or carriers elect to crossconnect passengers on a large scale. Many large and some medium FAA hubs serve as "connecting hubs".

- o In city-pair markets, which are widely considered the most relevant markets for competitive analysis, concentration has declined and competitive service has increased significantly. More than half the passengers traveled in markets with 3 or more competitive carriers in 1988 compared with one quarter of the passengers in 1979.
- o The number of markets receiving single-plane service in 1988 was 25 percent higher than in 1979 and about the same as 1984.
- o The major carriers faced much more competition in 1988 than in 1979 and generally as much as in 1984.
- o The increase in competitive service in city-pair markets in the face of increased concentration in the national market and at many hubs, is explained by the dramatic increase in the number of points served nationwide by the major carriers which are now interconnected through well developed hub and spoke networks. The ten carriers classified as major carriers, along with their code-sharing regional partners, now serve collectively 1,361 stations, compared to 746 stations in 1984 and 531 stations in 1979.

The analysis of hub and spoke networks in Part II yields the following observations:

- o The hub and spoke systems of today offer travelers convenient service to more destinations than did the linear systems they replaced.
- o The hubbing process by its very nature requires a large volume of frequent service and this leads naturally to a relatively high degree of concentration. Moreover, once hubs are established, carriers have a strong incentive to attempt to increase their control of traffic at their connecting hubs.
- o Attempts to control traffic at connecting hubs have also encouraged geographic expansion by all major carriers which has intensified service competition in many city-pair markets.
- o Hub concentration has intensified competition at smaller points which tend to receive service to several connecting hubs.

- o Virtually all non-hubbing carriers have stopped competing with nonstop service in city pairs involving a highly concentrated connecting hub. The number of nonstop competitors in city-pairs involving concentrated hubs, therefore, is essentially limited to carriers that hub at either end point.
- o There is evidence that the absence of service by non-hubbing carriers has reduced competition in certain city-pair markets, primarily relatively large city-pairs of under 1,000 miles, where on-line connecting competition generally is not a significant competitive factor.
- o The lack of non-hubbing service competition in city-pair markets suggests that new nonstop entry is not likely and increases the prospect that the existing competitors will not compete vigorously over time.
- o The incentives for carriers to control originating traffic at their connecting hubs and the loss of nonhubbing competition are consistent with load factor results which show that dominant carriers enjoy significant advantages relative to competitors at these hubs.
- o In view of the substantial load factor advantage enjoyed by dominant carriers at highly concentrated connecting hubs, in the absence of price deviations which could cause such differences, any expansion of service can be expected to involve the least risk where a carrier already has a high degree of concentration and the most risk where another carrier has a high degree of concentration. All else being equal, this would seem to encourage expansion by extending dominance at existing hubs or creating new hubs rather than by trying to compete at another carrier's hub.
- o When hub carriers at each endpoint of a city pair elect to compete, they tend to offer equivalent frequency.
- o While some dense short-haul markets affected by hub dominance appear to lack adequate single-plane competitive service, the number of local passengers in such markets represents less than 5 percent of total domestic traffic.

PART I

MEASURES OF SERVICE LEVELS,

COMPETITION, AND POINT CONCENTRATION

PART I
MEASURES OF
SERVICE LEVELS, COMPETITION, AND POINT CONCENTRATION

Part I consists of an overview of domestic service levels, competition and concentration, including measures of service and competition at both destination points and individual airports as well as data relating to nonstop city-pair and origin and destination (O&D) markets.

Clearly, the major carriers have greatly increased the overall volume and variety of service over the 1979-1988 period. The number of stations served by these carriers is up 156 percent since 1979, and by 80 percent from 1984. (Table I-6). They have expanded their networks through code-sharing in extending service to smaller points and by creating hubs (Table I-7). Most of the majors now serve all or nearly all of the 27 large hubs in the 48 contiguous states. Stations operated by the majors at the medium hubs more than doubled between 1979 and 1988 and stations at the small hubs increased by 181 percent in the same period.

Four alternative measures of competitive service at large, medium and small hubs were examined: (1) total number of carrier stations; (2) number of carrier stations of carriers with 18 or more departures per week; (3) number of carrier stations of

carriers with one percent or more of available seats; and (4) number of carrier stations of carriers with 10 percent or more of available seats. In almost all cases these measures show about the same results -- service to all hubs by the majors increased from 1979 to 1984 and then declined from the 1984 peak.

In the case of the large hubs the 1988 levels are lower than the 1979 levels, but for the medium and small hubs the 1988 levels are generally higher than the 1979 levels. (Table I-8). Medium and small hubs have particularly benefited in this regard from the shift to hub and spoke route systems. The extent of these benefits will be described further in Part II.

The level of competitive service of the 115 hubs in the 48 contiguous states has changed significantly over the 1979-1988 period. Carrier concentration at large hubs has grown substantially, with 17 having only one or two competitors in July 1988 compared to only three large hubs with this few competitors in 1979. ^{1/} The number of large hubs with four or more competitors decreased from 14 in 1979 to three in 1988.

Medium hubs were slightly more concentrated in 1988 than in 1979. While no medium hub was dominated by a single competitor in 1979, by 1988 four were (Table I-9).

^{1/} Competitors are those carriers providing 10 percent or more of total available seats at the point. Hub classification is as of 1988.

Offsetting the increases in concentration at the large and medium hubs, small hubs tended to gain in the numbers of competitors. In 1979, 24 small hubs had only one or two competitors; by 1988 no small hub was limited to a single competitor and only four had as few as two competitors. In 1979, only nine small hubs had four or more competitors; by 1988 this number had increased to 32.

From 1979 through 1988 there was about a 23 percent reduction in the number of nonhub airports, but those that have retained service are also much more competitive. While only 30 nonhubs had three competitors in 1979 and none had four or more, in 1988 a total of 79 had three or more competitors -- 56 with three and 23 with four or more. (Table I-9).

Table I-11 provides a detailed comparison of the number of competitors at each of the geographic points classified as large, medium and small hubs in 1988 as of July 1979, July 1984, and July 1988. Looked at from the point of view of enplanements and concentration, the same picture emerges. Concentration is up at large and some medium hubs but is down at small hubs and non-hubs. (Table I-12).

Enplanements at domestic airports were up 50 percent between 1979 and 1988, but more airports had decreases than increases. This reflects the service reductions and eliminations at the smallest traffic generating points. Between 1984 and 1988, enplanements were up 31.4 percent (an annual growth rate of 7.1 percent) and more than half of the airports had increases. (Tables I-13 and I-14).

An analysis of service in terms of weekly frequencies at all domestic points receiving scheduled service shows that between 1979 and 1988 frequencies were down at 57 percent of the points and up at 43 percent. Closer examination of the data indicates that the bulk of the points which lost frequency were points served by relatively small aircraft (Tables I-15 and I-16). In the more recent 1984-1988 period slightly more than half of the points recorded decreases in frequency, about three-quarters of which were points served by small aircraft. (Tables I-17 and I-18). Most of this reduction represented a paring down or elimination of commuter service at very small traffic generating points. Moreover, lower frequency under the hub and spoke systems of today may be superior to higher frequency under the linear service patterns of 1979 (See Part II, Table II-5.)

Although under the hub and spoke system single-plane service may not be as important as it once was, it still constitutes the main mode of travel for many air travelers. An analysis of changes in

single-plane service between 1979 and 1988 shows that of 5,400 single-plane markets served in July 1979, 2,434 (45.1 percent) were not served in July 1988; 1,515 (28.1 percent) were served by the same number of carriers in 1988 as in 1979; 547 (10.1 percent) were served by fewer carriers in 1988; and 904 (16.7 percent) were served by more carriers in 1988. (Table I-19). In July 1988, 2,348 markets received single-plane service which were not so served in July 1979. Much of this entry and exit occurs at the lower end of the traffic spectrum, primarily at low traffic volume points served by commuter carriers.

Of the 1,458 markets which received competitive single-plane service in July 1979, 178 (12.2 percent) did not receive single-plane service in July 1988; 371 (25.4 percent) were served by the same number of carriers in both years; 547 (37.5 percent) were served by fewer carriers; and 362 (24.8 percent) were served by more carriers in 1988 than in 1979.

The system was more competitive in 1988 than in 1979 in terms of single-plane service. Monopoly markets declined 11.7 percent (from 3,942 to 3,481) while competitive markets (those served by 2 or more carriers) rose 25.7 percent (from 1,458 to 1,833). Total single-plane markets decreased by 1.6 percent, from 5,400 to 5,314. (Table I-20).

All major carriers had substantial increases in the number of

single-plane markets served between July 1979 and July 1988. The data show a tremendous expansion of service by the majors, reflecting the growth of their own service and the expansion of service by their code-sharing commuters. For all carriers, 1988 single-plane service competition was comparable to 1984 (Tables I-21 and I-22).

Comparisons of the revenue passenger mile (RPM) shares in the top 100 RPM markets of each major carrier indicate increased competitiveness in city-pair markets. In all cases major carrier shares show a decline from 1979 to 1984 and all but one (Pan American) show a decline in the 1979-1988 comparison. The RPM shares for the three top competitors of each major carrier show about half up and half down for the 1979-1984, 1984-1988 and 1979-1988 comparisons. (Tables I-23 and I-24). In 1979 five major carriers' percentage shares exceeded the shares of the top 3 competitors. By 1984, only one carrier's share (United) exceeded that of its top three competitors and this also held true for the year ended September 30, 1988.

Table I-25 is a detailed listing of the RPMs of each major carrier's top 100 markets in the years 1979, 1984 and the year ended September 30, 1988, and the RPM of its competitors in these markets. Generally, market shares for the majors in their top 100 RPM markets declined from 1979 to 1988 because of the expansion in

the number of markets served, as shown in Table I-21. In this period carriers entered many markets which they had been precluded from serving prior to 1978. Many of these were larger markets in which it was not possible to gain large market shares, at least in the short run. With all of the new entry which occurred, competition was more intense in most markets and it was more difficult to maintain market share.

Carrier market shares in the top 50 RPM markets for the year ending September 30, 1988 are shown in Table I-26 and are compared with the RPM shares for the years 1984 and 1979. In 1988, there was an average of 8.7 carriers with a market share of one percent or more per market, compared to an average of 8.5 carriers per market in 1984 and 5.3 carriers per market in 1979.

The connecting hubs of the major carriers have become increasingly important to their overall operations as measured by relative share of total departures or enplanements at those hubs. Between 1979 and 1988 all carriers had increases in both measures. (Table I-27).

In contrast to point concentration, city-pair concentration has declined in every density category. The measures vary from one density category to another. While concentration in the more dense city pair markets (500 passengers per day or more) has changed only modestly, the change has been dramatic in all other density categories.

NUMBER OF AIR CARRIERS OPERATING, 1978-1988

Tables I-1 through I-4

Objective: To enumerate the certificated and commuter air carriers actually operating (as reflected by actual reports filed with the CAB or DOT), to count the new entrants which actually conducted operations and the number of carriers deleted.

Data Sources: Data are derived from records of the Office of Aviation Information Management, Research and Special Programs Administration (RSPA).

Observations/Interpretation: Between 1978 and 1988 a total of 178 certificated carriers filed reports with the CAB or DOT. Of this total, 67 were still in operation in January 1989, while 111 had ceased reporting. Twenty-one of the 43 carriers from 1978 were still in operation and 22 had been deleted due to merger, financial failure, cessation of operations or grant of a waiver to file less detailed reports. Of the 135 new entrants in the 1979-1988 period 46 (34 percent) were still operating in January 1989, while 89 had been deleted.

From 1981 through 1988, 94 small certificated carriers filed Form 298-C reports on their operations with the CAB or DOT. Forty-two carriers were deleted from this group, leaving a total of 52 in operation at the end of 1988.

For commuter carriers filing Form 298-C reports, the peak of the passenger carrying carriers was 1983, when there were 144 reporting carriers in the fourth quarter. The figure for the fourth quarter of 1988 was 111, a net decrease of 33 carriers from the peak year.

CERTIFICATED AIR CARRIERS FILING FORM 41
IN THE FOURTH QUARTER, 1979-1988

| <u>Year</u> | <u>Number of Carriers --</u> | | | |
|-------------|--|-------------------------------------|---------------------------------|-----------------------------------|
| | <u>At End of</u> <u>Previous Year</u> | <u>New</u> <u>Carriers Added</u> | <u>Total</u> <u>Carriers</u> | <u>Carriers</u> <u>Deleted</u> |
| 1979 | 43 | 22 | 65 | 5 |
| 1980 | 60 | 17 | 77 | 5 |
| 1981 | 72 | 16 | 88 | 8 |
| 1982 | 80 | 10 | 90 | 15 |
| 1983 | 75 | 18 | 93 | 9 |
| 1984 | 84 | 19 | 103 | 16 |
| 1985 | 87 | 18 | 105 | 19 |
| 1986 | 86 | 7 | 93 | 19 |
| 1987 | 74 | 5 | 79 | 11 |
| 1988 | 68 | 3 | 71 | 4 |
| Total | -- | 135 | -- | 111 |

Source: Office of Aviation Information Management, Research and
Special Programs Administration.

STATUS OF CERTIFICATED CARRIERS BY YEAR
OF FIRST FILED REPORTS, 1978-1988

| <u>Year</u> | <u>Number of Carriers --</u> | | |
|---------------|------------------------------------|---------------------------|--------------------------------|
| | <u>By Year of First Report</u> | <u>Still Operating 1/</u> | <u>Carriers Deleted 2/</u> |
| 1978 | 43 3/ | 21 | 22 |
| 1979 | 22 | 4 | 18 |
| 1980 | 17 | 3 | 14 |
| 1981 | 16 | 3 | 13 |
| 1982 | 10 | 1 | 9 |
| 1983 | 18 | 8 | 10 |
| 1984 | 19 | 10 | 9 |
| 1985 | 18 | 7 | 11 |
| 1986 | 7 | 2 | 5 |
| 1987 | 5 | 5 | 0 |
| 1988 | 3 | 3 | 0 |
| Total | 178 | 67 | 111 |
| 1978 Carriers | 43 | 21 | 22 |
| New Entrants | 135 | 46 | 89 |

1/ Carriers still operating as of January 1989.

2/ Includes carriers deleted due to merger, financial failure, cessation of operation or grant of waiver to file less detailed reports.

3/ Number of carriers filing reports in the 4th Quarter of 1978.

Source: Office of Aviation Information Management, Research and Special Programs Administration.

SMALL CERTIFICATED AIR CARRIERS FILING
FORM 298-C IN THE FOURTH QUARTER, 1981-1988

| <u>Year</u> | <u>Number of Carriers</u> | | | |
|-------------|--|--|---------------------------------|--------------------------------------|
| | <u>At End of</u> <u>Previous Year</u> | <u>New</u> <u>Carriers Added 1/</u> | <u>Total</u> <u>Carriers</u> | <u>Carriers</u> <u>Deleted 2/</u> |
| 1981 | 0 | 3 | 3 | 0 |
| 1982 | 3 | 26 | 29 | 1 |
| 1983 | 28 | 16 | 44 | 3 |
| 1984 | 41 | 7 | 48 | 8 |
| 1985 | 40 | 16 | 56 | 13 |
| 1986 | 43 | 14 | 57 | 6 |
| 1987 | 51 | 5 | 56 | 2 |
| 1988 | 54 | 7 | 61 | 9 |
| Total | -- | 94 | -- | 42 |

1/ Includes completely new carriers and carriers granted waivers from filing more-detailed Form 41 reports.

2/ Includes carriers deleted due to merger, financial failure, cessation of operation or grant of waiver.

Source: Office of Aviation Information Management, Research and Special Programs Administration.

COMMUTER AIR CARRIERS FILING FORM 298-C
IN THE FOURTH QUARTER, 1978-1988

| <u>Year</u> | <u>Number of Carriers Filing 4th Quarter Reports</u> |
|----------------|--|
| 1978 | 242 |
| 1979 | 230 |
| 1980 | 230 |
| 1981 <u>1/</u> | 135 |
| 1982 | 135 |
| 1983 | 144 |
| 1984 | 127 |
| 1985 | 143 |
| 1986 | 135 |
| 1987 | 126 |
| 1988 | 111 |

1/ The decrease from 1980 to 1981 reflects the deletion of all-cargo and mail carriers from the commuter definition.

Source: Office of Aviation Information Management,
Research and Special Programs Administration.

DOMESTIC CONCENTRATION IN THE AIRLINE INDUSTRY

Table I-5

Objective: To trace domestic airline industry concentration for the period 1978-1988.

Data Source: CAB/DOT Form 41 Reports as summarized in CAB/DOT Air Carrier Traffic Statistics

Observations/Interpretation: Following enactment of the Airline Deregulation Act (ADA) in October 1978, the Civil Aeronautics Board certificated several new airlines. Although many of these new carriers never operated, several did. The ADA also loosened many regulatory roadblocks to competition, which enabled the existing carriers to expand their domestic operations significantly. As a result, the level of airline concentration -- as measured by revenue passenger miles (RPMs) -- in domestic markets showed a gradual decline from 1978 through the mid-1980s.

In 1985 the Department approved 5 mergers and acquisitions. In 1986 it approved 13. In 1987 it approved 3. In 1988 it approved 1. With this era of mergers and acquisition and the cessation of operations by a number of new entrants, the number of competitors sharply declined. Accordingly, the degree of industry concentration has risen to the point where the concentration level in domestic operations now exceeds that which existed in 1978.

The level of concentration among the top 5 carriers declined substantially from 68.80 percent in 1978 to 57.30 percent in 1985 (a decline of 950 basis points), then climbed to 74.05 percent in 1987, with a slight decline to 73.78 percent in 1988. For the top 5 carriers this represents a net increase of 498 basis points above the 1978 concentration level, but a significant jump of 1648 basis points since 1985.

Among the top 15 air carriers, domestic concentration declined each year from 95.80 percent in 1978 to 89.66 percent in 1983 (a drop of 614 basis points). The degree of concentration then rose each year reaching a level of 98.59 percent in 1988 (an increase of 893 basis points since 1983 and 309 basis points since 1978) for the top 15 carriers.

Similar results occurred among the top 20 carriers. In 1978 the top 20 carriers operated 99 percent of the domestic revenue passenger miles. However, by 1983 the top 20 carriers' RPM share declined to 94.20 percent (a decrease of 480 basis points) then rose to 99.43 percent in 1988 (a slight increase of 43 basis points above the 1978 level).

PERCENT OF DOMESTIC RPM'S BY CARRIER RANK
CY 1978 - 1988

| Carrier Rank | 1978 | | 1979 | | 1980 | | 1981 | | 1982 | | 1983 | |
|--------------|---------|--------|----------|--------|---------|--------|---------|--------|---------|--------|---------|--------|
| | Carrier | % | Carrier | % | Carrier | % | Carrier | % | Carrier | % | Carrier | % |
| 1 | UA | 21.60% | UA | 17.98% | UA | 18.90% | UA | 17.51% | UA | 18.30% | UA | 18.63% |
| 2 | AA | 13.80% | AA | 13.85% | AA | 12.10% | AA | 12.74% | AA | 13.50% | AA | 13.49% |
| Top 2 | | 35.40% | | 31.84% | | 31.00% | | 30.24% | | 31.80% | | 32.11% |
| 3 | DL | 12.30% | DL | 11.70% | DL | 12.10% | EA | 12.03% | EA | 11.30% | DL | 10.88% |
| Top 3 | | 47.70% | | 43.53% | | 43.10% | | 42.27% | | 43.10% | | 42.99% |
| 4 | EA | 11.40% | EA | 11.30% | EA | 11.70% | DL | 11.34% | DL | 10.90% | EA | 10.91% |
| Top 4 | | 59.10% | | 54.84% | | 54.80% | | 53.61% | | 54.00% | | 53.90% |
| 5 | TW | 9.70% | TW | 9.67% | TW | 9.20% | TW | 7.93% | TW | 7.40% | TW | 6.89% |
| Top 5 | | 68.80% | | 64.51% | | 64.00% | | 61.54% | | 61.40% | | 60.79% |
| 6 | WA | 5.20% | BN | 4.50% | PA | 4.40% | NW | 4.11% | RC | 4.40% | RC | 4.17% |
| 7 | CO | 4.60% | WA | 4.48% | NW | 4.20% | PA | 3.82% | NW | 4.10% | NW | 4.07% |
| 8 | BN | 3.90% | NW | 4.22% | WA | 3.90% | RC | 3.79% | WA | 3.90% | WA | 3.78% |
| 9 | NA | 3.70% | CO | 4.16% | BN | 3.70% | WA | 3.60% | CO | 3.90% | CO | 3.41% |
| 10 | NW | 2.70% | NA | 3.21% | CO | 3.60% | CO | 3.44% | PA | 3.40% | PA | 3.26% |
| Top 10 | | 88.90% | | 85.07% | | 83.80% | | 80.30% | | 81.10% | | 79.47% |
| 11 | AL | 2.20% | AL | 2.43% | RC | 3.50% | BN | 3.12% | AL | 2.90% | AL | 3.18% |
| 12 | RW | 1.40% | RC/NC/SO | 1.81% | AL | 2.70% | AL | 2.74% | PI | 1.90% | PI | 2.23% |
| 13 | FL | 1.30% | FL | 1.41% | FL | 1.50% | FL | 1.73% | FL | 1.70% | FL | 1.68% |
| 14 | PA | 1.10% | PS | 1.32% | PI | 1.20% | PI | 1.62% | WN | 1.40% | WN | 1.68% |
| 15 | NC | .90% | RW | 1.25% | TI | 1.10% | WO | 1.37% | PS | 1.30% | PE | 1.42% |
| Top 15 | | 95.80% | | 93.29% | | 93.80% | | 90.88% | | 90.30% | | 89.66% |
| 16 | TI | .90% | PA | 1.20% | WO | 1.00% | WN | 1.15% | BN | 1.10% | PS | 1.33% |
| 17 | PI | .80% | TI | 1.08% | WN | 1.00% | TI | 1.12% | CL | 1.10% | OZ | 1.15% |
| 18 | OZ | .80% | PI | .93% | PS | 1.00% | PS | 1.11% | OZ | 1.00% | WO | .74% |
| 19 | SO | .70% | OZ | .81% | OZ | .80% | OZ | .98% | TI | 1.00% | AS | .67% |
| 20 | - | - | WN | .70% | OC | .50% | CL | .74% | WO | .90% | OC | .66% |
| Top 20 | | 99.00% | | 98.00% | | 98.10% | | 95.98% | | 95.40% | | 94.20% |

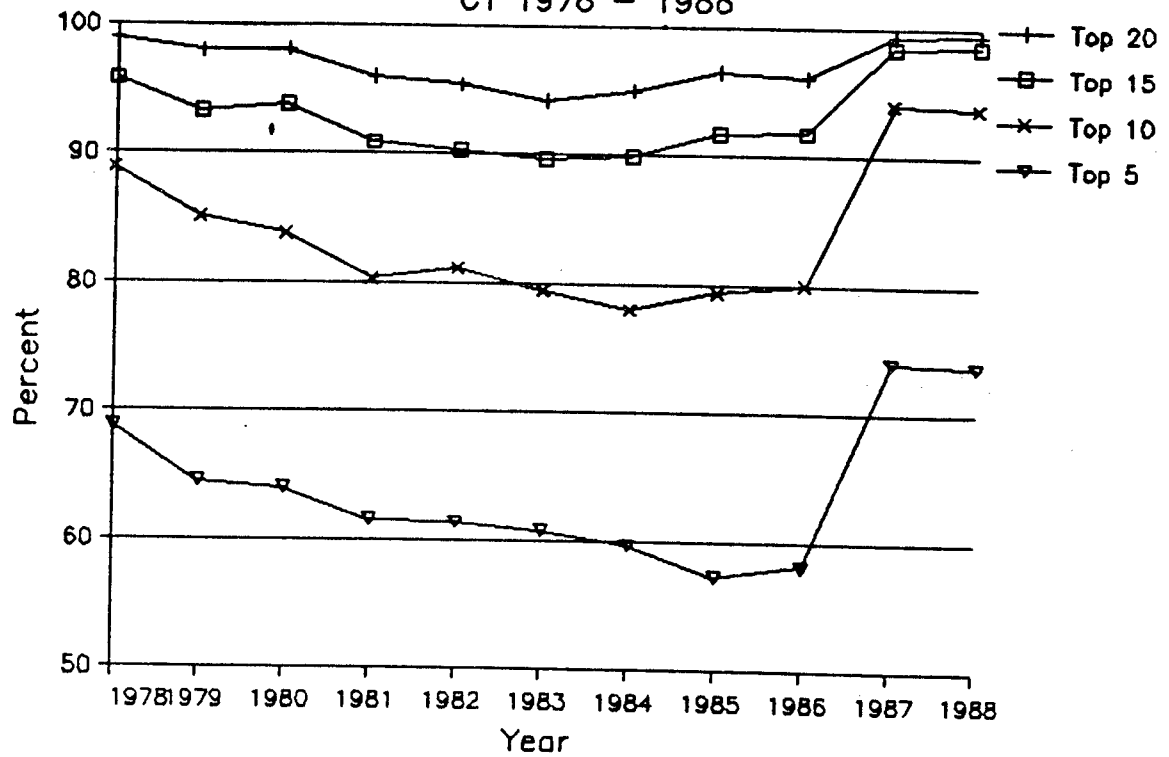
PERCENT OF DOMESTIC RIM'S BY CARRIER RANK
CY 1978 - 1988

| Carrier Rank | 1984 | | 1985 | | 1986 | | 1987 | | 1988 | |
|--------------|---------|--------|----------|--------|----------|--------|----------|--------|----------|--------|
| | Carrier | % | Carrier | % | Carrier | % | Carrier | % | Carrier | % |
| 1 | UA | 18.40% | UA | 14.90% | UA | 17.10% | CO/EA/RU | 20.13% | CO/EA | 17.09% |
| 2 | AA | 13.90% | AA | 14.80% | AA | 14.50% | UA | 17.04% | UA | 16.93% |
| Top 2 | | 32.30% | | 29.70% | | 31.60% | | 37.17% | | 34.02% |
| 3 | EA | 10.90% | EA | 11.20% | EA | 10.50% | AA/OC | 15.24% | AA | 16.74% |
| Top 3 | | 43.20% | | 40.90% | | 42.10% | | 52.41% | | 50.76% |
| 4 | DL | 10.40% | DL | 10.30% | DL | 9.60% | DL/WA | 12.79% | DL | 13.74% |
| Top 4 | | 53.60% | | 51.20% | | 51.70% | | 65.20% | | 64.50% |
| 5 | TW | 6.10% | TW | 6.10% | CO/NY | 6.40% | AL/PI/PS | 8.85% | AL/PI/PS | 9.28% |
| Top 5 | | 59.70% | | 57.30% | | 58.10% | | 74.05% | | 73.78% |
| 6 | NW | 4.00% | PE/FL/RU | 5.30% | TW | 5.80% | NW | 7.80% | NW | 7.28% |
| 7 | CO | 3.80% | CO | 5.10% | NW | 5.00% | TW | 6.37% | TW | 6.31% |
| 8 | WA | 3.60% | NW | 4.10% | PE/FL/RU | 4.00% | WN/MC | 2.44% | WN | 2.32% |
| 9 | RC | 3.50% | RC | 4.00% | AL | 3.70% | HP | 1.76% | HP | 2.13% |
| 10 | AL | 3.40% | WA | 3.60% | WA | 3.40% | PA | 1.61% | PA | 1.99% |
| Top 10 | | 78.00% | | 79.40% | | 80.00% | | 94.02% | | 93.80% |
| 11 | PE | 2.70% | AL | 3.60% | PI/UR | 3.40% | AS/SI/QX | 1.25% | BN/ZO | 1.46% |
| 12 | PI | 2.60% | PI/UR | 3.10% | RC | 3.10% | BN | 1.03% | AS/QX | 1.18% |
| 13 | PA | 2.50% | WN/MC | 2.40% | WN/MC | 2.40% | HA | .94% | ML | .90% |
| 14 | FL | 2.10% | PA | 1.90% | PA | 1.50% | ML | .78% | HA | .84% |
| 15 | WN | 1.90% | PS | 1.30% | PS | 1.40% | TZ | .44% | TZ | .42% |
| Top 15 | | 89.80% | | 91.70% | | 91.80% | | 98.46% | | 98.59% |
| 16 | PS | 1.30% | WO | 1.20% | HP | 1.10% | CM | .25% | SYQ | .23% |
| 17 | WO | 1.20% | OZ | 1.10% | AS | .90% | SYQ | .21% | CM | .23% |
| 18 | OZ | 1.10% | AS | .90% | BN | .80% | ZO | .19% | AQ | .13% |
| 19 | BN | .80% | HP | .80% | HA | .80% | XV | .13% | ZW | .13% |
| 20 | AS | .80% | BN | .80% | OZ | .70% | JK | .12% | PC | .12% |
| Top 20 | | 95.00% | | 95.00% | | 95.00% | | 95.00% | | 95.00% |

Carrier Decoding List

| Carrier Code ----- | Carrier ----- | Carrier Code ----- | Carrier ----- |
|--------------------------|------------------|--------------------------|------------------------|
| AA | American | PC | Skyworld/Ports of Call |
| AL | USAir/Allegheny | PE | Peoples |
| AQ | Aloha | PI | Piedmont |
| AS | Alaska | PS | Pacific Southwest |
| BN | Braniff | QX | Horizon |
| CL | Capitol | RC | Republic |
| CO | Continental | RU | Britt |
| DL | Delta | RW | Hughes Airwest |
| EA | Eastern | SI | Jet America |
| FL | Frontier | SO | Southern |
| GM | Air America | SYQ | Sun Country |
| HA | Hawaiian | TI | Texas International |
| HP | America West | TW | Trans World |
| JK | Sun World | TZ | American Transair |
| MC | Muse/Transtar | UA | United |
| ML | Midway | UR | Empire |
| NA | National | WA | Western |
| NC | North Central | WN | Southwest |
| NW | Northwest | WO | World |
| NY | New York Air | XV | Presidential |
| OC | Air California | ZO | Florida Express |
| OZ | Ozark | ZW | Air Wisconsin |
| PA | Pan American | | |

PERCENT OF DOMESTIC RPM's BY CARRIER RANK CY 1978 - 1988



SERVICE TO POINTS BY MAJOR CARRIERS

Table I-6

Objective: To show the total number of points served by each major carrier and its code-sharing affiliates in July 1979, July 1984, and July 1988, to indicate the growth of service by each carrier and the majors as a group.

Data Sources: OAG tapes. Data include code-sharing affiliates so this must be recognized in interpreting the results.

Observations/Interpretation: The 10 major carriers under the current classification system operated 531 stations in July 1979. In July 1984, these same carriers served 745 stations and in July 1988 they served 1,361 stations. This represents a 40 percent increase from 1979 to 1984 and an 83 percent increase from 1984 to 1988. From 1979 to 1988 the total increase is 156 percent. Except for Pan American, all carriers showed increases from 1979 to 1984, 1984 to 1988, and 1979 to 1988. Pan American had an increase from 1979 to 1984 (25 to 40) but a decrease from 1984 to 1988 (40 to 35). From 1979 to 1988 it showed an increase from 25 to 35. These data reflect the rapid expansion of the majors' systems following deregulation through internal growth and acquisitions and the expansion of code-sharing networks.

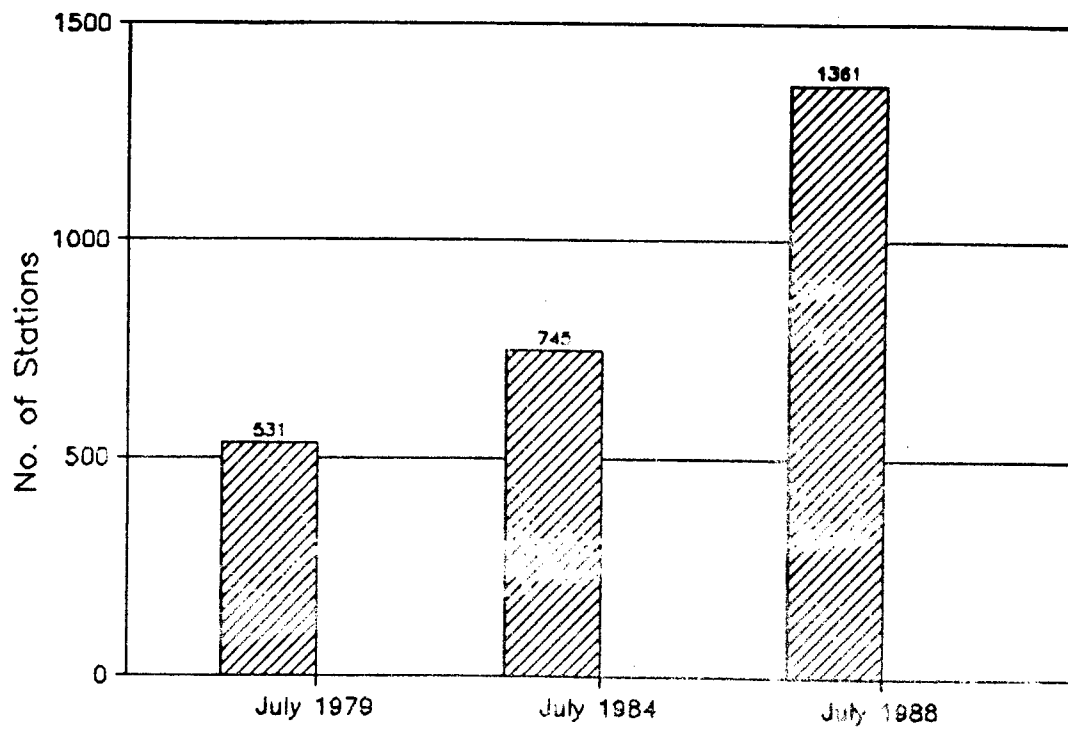
NUMBER OF POINTS SERVED, MAJOR CARRIERS
Month of July, 1979, 1984, and 1988

| Carrier | Number of Points Served | | |
|--------------------------------|-------------------------|------|-------|
| | 1979 | 1984 | 1988 |
| American | 50 | 75 | 173 |
| Continental | 32 | 64 | 137 |
| Delta | 69 | 107 | 190 |
| Eastern | 63 | 84 | 142 |
| Northwest | 34 | 42 | 167 |
| Pan American | 25 | 40 | 35 |
| Piedmont | 48 | 70 | 123 |
| Trans World | 49 | 59 | 94 |
| United | 80 | 112 | 169 |
| USAir | 81 | 92 | 131 |
| Total Stations (Duplicated) | 531 | 745 | 1,361 |

Note: Includes service provided by code-sharing commuters. Data limited to 48 contiguous states.

Source: Official Airline Guide, July 1979, July 1984 and July 1988.

NUMBER OF STATIONS SERVED, MAJOR CARRIERS MONTH OF JULY, 1979, 1984 and 1988



SERVICE TO FAA HUBS BY MAJOR CARRIERS

Table I-7

Objective: To enumerate the large, medium and small hubs served by each major carrier in 1979, 1984 and 1988 to illustrate the expansion of service by these carriers.

Data Sources: OAG tapes. Later data contain code-sharing service so this must be recognized in interpreting the results.

Observations/Interpretation: The summary figures for each hub type show a steady increase in the number of stations operated by the majors as a group. From July 1979 to July 1988 the numerical and percentage increases were:

| <u>Hub Type</u> | <u>Number</u> | <u>Percent Increase</u> |
|-----------------|---------------|-------------------------|
| Large | 77 | 43% |
| Medium | 127 | 102% |
| Small | 189 | 181% |

All 10 major carriers showed increases in large hubs served between 1979 and 1988. Some of the smaller carriers showed substantial increases, e.g., Pan American from 8 in 1979 to 23 in 1984 and then to 20 in 1988; or Piedmont with 13 in 1979, 18 in 1984 and 24 in 1988. Four carriers now serve all 27 large hubs: American, Delta, TWA and United, and three more, Eastern, Northwest and USAir, serve all but one. This is a considerable change from 1979 when 23 was the maximum number of large hubs served by any carrier.

The gains in medium hubs served were even more dramatic than for large hubs. All carriers showed sizeable gains between 1979 and 1988. Two carriers, American and United, now serve all 31 medium hubs, while 22 was the maximum served by any carrier in 1979. Large increases were made by Pan American -- from none in 1979 to 14 in 1984 and 1988, and Northwest -- from 4 in 1979 to 8 in 1984 to 25 in 1988.

All carriers showed increases in the number of small hubs served. On average, each of the majors serves about half of the 57 small hubs, with Continental, Pan American, TWA and USAir on the low side. United, American and Delta serve 45, 44 and 43, respectively.

NUMBER OF LARGE, MEDIUM AND SMALL HUBS SERVED, MAJOR CARRIERS
Month of July, 1979, 1984 and 1988

| Carrier | Large Hubs | | | Medium Hubs | | | Small Hubs | | |
|----------------|------------|------|------|-------------|------|------|------------|------|------|
| | 1979 | 1984 | 1988 | 1979 | 1984 | 1988 | 1979 | 1984 | 1988 |
| American | 21 | 26 | 27 | 22 | 28 | 31 | 7 | 19 | 44 |
| Continental | 14 | 21 | 25 | 11 | 11 | 28 | 4 | 8 | 25 |
| Delta | 23 | 27 | 27 | 17 | 21 | 28 | 17 | 30 | 43 |
| Eastern | 21 | 26 | 26 | 18 | 26 | 24 | 20 | 21 | 32 |
| Northwest | 18 | 22 | 26 | 4 | 8 | 25 | 4 | 5 | 32 |
| Pan American | 8 | 23 | 20 | 0 | 14 | 14 | 0 | 2 | 2 |
| Piedmont | 13 | 18 | 24 | 5 | 10 | 17 | 9 | 21 | 28 |
| Trans World | 22 | 25 | 27 | 15 | 25 | 26 | 9 | 9 | 17 |
| United | 23 | 27 | 27 | 17 | 31 | 31 | 22 | 37 | 45 |
| USAir | 15 | 23 | 26 | 15 | 17 | 27 | 12 | 17 | 25 |
| Total Stations | 178 | 238 | 255 | 124 | 191 | 251 | 104 | 169 | 293 |

Note: Includes service provided by code-sharing commuters.
Data limited to 48 contiguous states.

Source: Official Airline Guide, July 1979, July 1984 and July 1988.

MEASURES OF MULTI-CARRIER SERVICE

Table I-8

Objective: To compare alternative measures of multi-carrier service at the 115 FAA hubs for the years 1979, 1984 and 1988, in order to measure changes in competition at points in this period.

Data Source: OAG tapes.

Observations/Interpretation: At the 27 FAA large hubs the total number of carrier stations rose from 680 in 1979 to 876 in 1984 and then declined to 638 in 1988. In 1988, the average number of carriers operating at large hubs was only slightly lower than the average for 1979. A three round-trip pattern six days a week in one non-stop city-pair market would require 18 weekly departures. Carriers with 18 or more weekly departures rose from 433 in 1979 to 593 in 1984 and then declined to 390 in 1988. Carriers with 1% or more of available seats rose from 290 in 1979 to 379 in 1984 and then declined to 270 in 1988. Carriers with a 10% or greater share of available seats declined steadily from 95 in 1979 to 65 in 1984 to 60 in 1988. All four measures at large hubs, were lower in 1988 than in 1979 or 1984.

At the 31 FAA medium hubs, the picture is somewhat different. Three of the four measures of multi-carrier service are higher in 1988 than in 1979. At the 31 medium hubs the total number of carrier stations rose from 298 in 1979 to 461 in 1984 and then declined to 353 in 1988. Carriers with 18 or more weekly departures rose from 246 in 1979 to 359 in 1984 and then declined to 287 in 1988. Carriers with 1% or more of available seats rose from 238 in 1979 to 367 in 1984 and then declined to 300 in 1988. Carriers with 10% or more of available seats declined from 103 in 1979 to 91 in 1984 and then rose to 95 in 1988.

At the 57 FAA small hubs the total number of carrier stations rose from 277 in 1979 to 380 in 1984 and then declined to 351 in 1988. Carriers with 18 or more departures per week rose from 222 in 1979 to 304 in 1984 to 307 in 1988. Carriers with 1% or more of available seats rose from 247 in 1979 to 357 in 1984 and then declined to 333 in 1988. Carriers with 10% or more of available seats rose from 150 in 1979 to 205 in 1984 to 213 in 1988.

In summary, these measures show generally that multi-carrier service to the hubs increased from 1979 to 1984 and then declined from the 1984 peak. In the case of the large hubs the 1988 levels are lower than the 1979 levels. For the medium and small hubs the 1988 levels are generally higher than the 1979 levels, although less than the 1984 peaks.

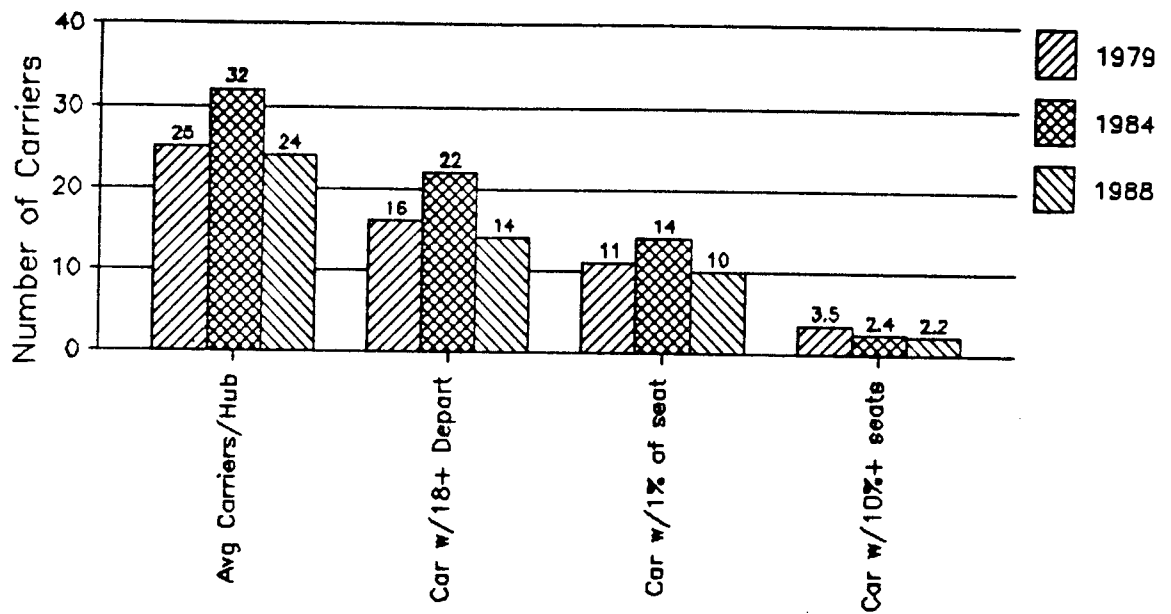
MEASURES OF MULTIPLE CARRIER SERVICE AT
LARGE, MEDIUM AND SMALL HUBS
Month of July 1979, 1984 and 1988

| | <u>Number of Carriers</u> | | | <u>Average Per Hub</u> | | |
|---|---------------------------|-------------|-------------|------------------------|-------------|-------------|
| | <u>1979</u> | <u>1984</u> | <u>1988</u> | <u>1979</u> | <u>1984</u> | <u>1988</u> |
| <u>27 Large Hubs</u> | | | | | | |
| Total No. of Carrier Stations | 680 | 876 | 638 | 25.2 | 32.4 | 23.6 |
| Carriers with 18 or more departures per week | 433 | 593 | 390 | 16.0 | 22.0 | 14.4 |
| Carriers with 1% or more of available seats | 290 | 379 | 270 | 10.7 | 14.0 | 10.0 |
| Carriers with 10% or more of available seats | 95 | 65 | 60 | 3.5 | 2.4 | 2.2 |
| <u>31 Medium Hubs</u> | | | | | | |
| Total No. of Carrier Stations | 298 | 461 | 353 | 9.6 | 14.9 | 11.4 |
| Carriers with 18 or more departures per week | 246 | 359 | 287 | 7.9 | 11.6 | 9.3 |
| Carriers with 1% or more of available seats | 238 | 367 | 300 | 7.7 | 11.8 | 9.7 |
| Carriers with 10% or more of available seats | 103 | 91 | 95 | 3.3 | 2.9 | 3.1 |
| <u>57 Small Hubs</u> | | | | | | |
| Total No. of Carrier Stations | 277 | 380 | 351 | 4.9 | 6.7 | 6.2 |
| Carriers with 18 or more departures per week | 222 | 304 | 307 | 3.9 | 5.3 | 5.4 |
| Carriers with 1% or more of available seats | 247 | 357 | 333 | 4.3 | 6.3 | 5.8 |
| Carriers with 10% or more of available seats | 156 | 205 | 213 | 2.7 | 3.6 | 3.7 |

Source: Official Airline Guide, July 1979, July 1984 and
July 1988.

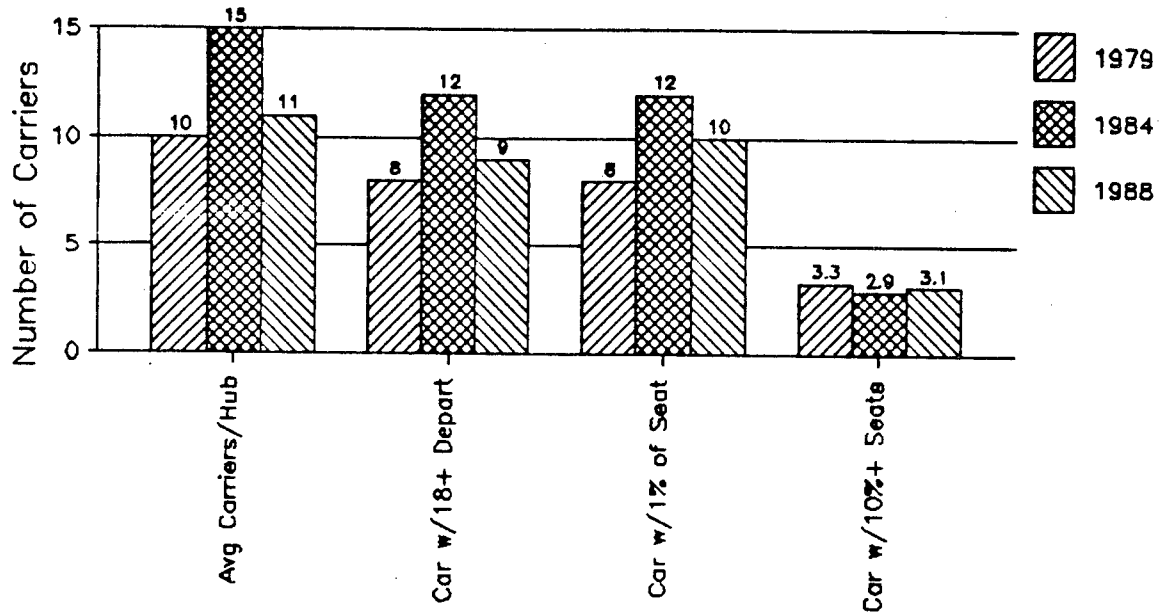
Multi-Carrier Service At Large Hubs

Month of July, 1979, 1984 and 1988



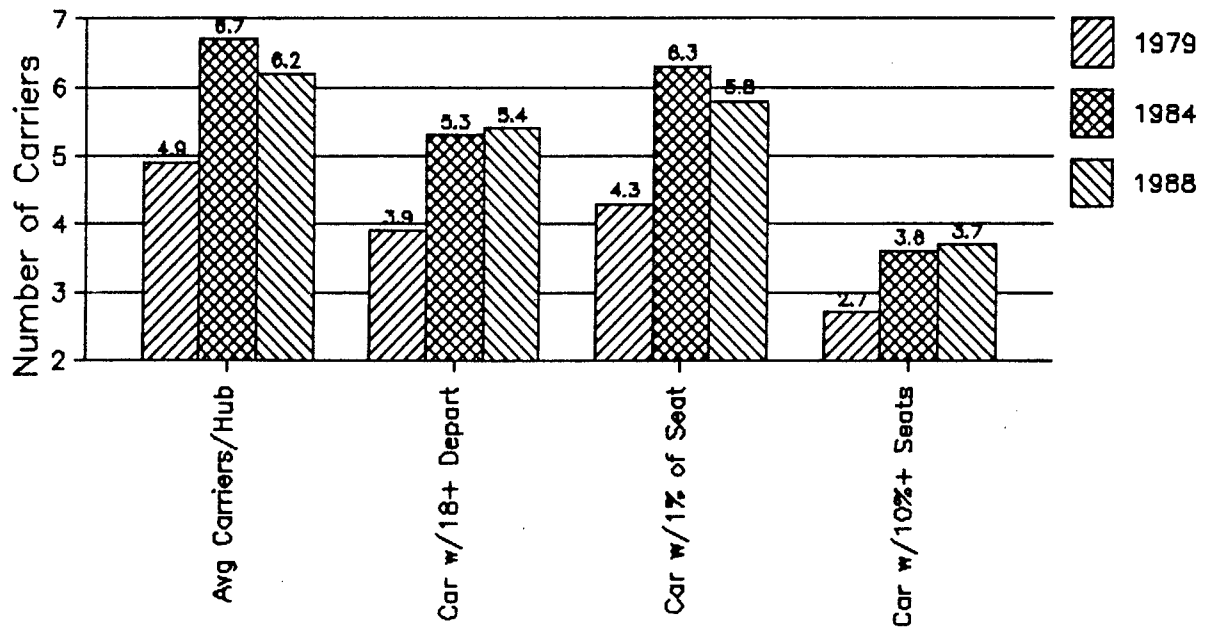
Multi-Carrier Service At Medium Hubs

Month of July, 1979, 1984 and 1988



Multi-Carrier Service At Small Hubs

Month of July, 1979, 1984 and 1988



COMPETITION AT DOMESTIC POINTS

Tables I-9 and I-10

Objective: To array all points served in the months of July 1979, July 1984 and July 1988 by competitive status (number of competitors defined as carriers providing 10 percent or more of available seats) and to show changes in the relative competitive status for the hub classes.

Data Sources: OAG tapes.

Observations/Interpretation: As Table I-9 shows, large hubs have become much more concentrated, with 17 having only 1 or 2 competitors in July 1988 vs. only 3 in 1979. Large hubs with 4 or more competitors dropped from 14 in 1979 to 3 in 1988. Medium hubs also show somewhat more concentration. While no medium hub was dominated by a single competitor in 1979, in 1988 4 were. Small hubs are clearly less concentrated. In 1979, 24 had only 1 or 2 competitors. In 1988 none had a single competitor and only 4 had 2. While 9 small hubs had 4 or more competitors in 1979, 32 did in 1988. Three hundred sixty-six nonhubs were served in all 3 years. Most noteworthy is the fact that while only 29 nonhubs had 3 competitors in 1979 and none had 4 or more, in 1988 a total of 80 had 3 or more competitors -- 57 with 3 and 23 with 4 or more.

Table I-10 shows the percent of FAA hubs by competitive status. Most noteworthy is the increase of small hubs with 4 or more competitors from 15.8 percent of small hubs in 1979 to 56.1 percent in 1988.

NUMBER OF POINTS SERVED, BY HUB TYPE AND NUMBER OF COMPETITORS
Month of July, 1979, 1984 and 1988

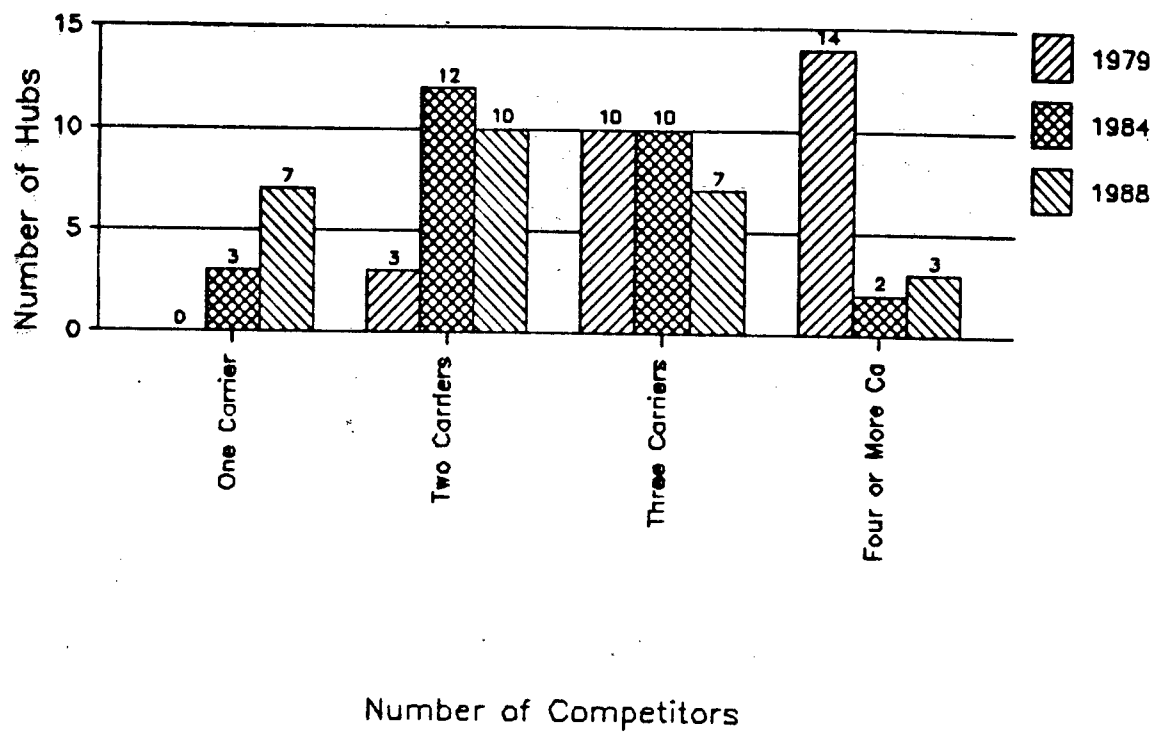
| | Number of Points, July 1979 | | | | | Number of Points, July 1984 | | | | | Number of Points, July 1988 | | | | | |
|-------------|-----------------------------|-----|-----|----|----|-----------------------------|-----|----|----|----|-----------------------------|-----|-----|----|----|----|
| | By Number of Competitors 1/ | | | | | By Number of Competitors 1/ | | | | | By Number of Competitors 1/ | | | | | |
| | Total | 1 | 2 | 3 | 4+ | Total | 1 | 2 | 3 | 4+ | Total | 1 | 2 | 3 | 4+ | |
| Large Hubs | 27 | 0 | 3 | 10 | 14 | 27 | 3 | 3 | 12 | 10 | 2 | 27 | 7 | 10 | 7 | 3 |
| Medium Hubs | 31 | 0 | 5 | 12 | 14 | 31 | 2 | 10 | 10 | 9 | | 31 | 4 | 4 | 11 | 12 |
| Small Hubs | 57 | 4 | 20 | 24 | 9 | 57 | 0 | 9 | 18 | 30 | | 57 | 0 | 4 | 21 | 32 |
| Total Hubs | 115 | 4 | 28 | 46 | 37 | 115 | 5 | 31 | 38 | 41 | | 115 | 11 | 18 | 39 | 47 |
| Nonhubs 2/ | 366 | 215 | 122 | 29 | 0 | 366 | 201 | 96 | 54 | 15 | | 366 | 192 | 94 | 57 | 23 |

1/ Competitors are those carriers providing 10 percent or more of total seats available at the point.
2/ Includes only points served in all three years. The total number of nonhubs served in each year were:
505 in 1979, 432 in 1984 and 389 in 1988.

Source: Official Airline Guide, July 1979, July 1984 and July 1988. Includes 48 contiguous states only.
Hub classifications are as of 1988.

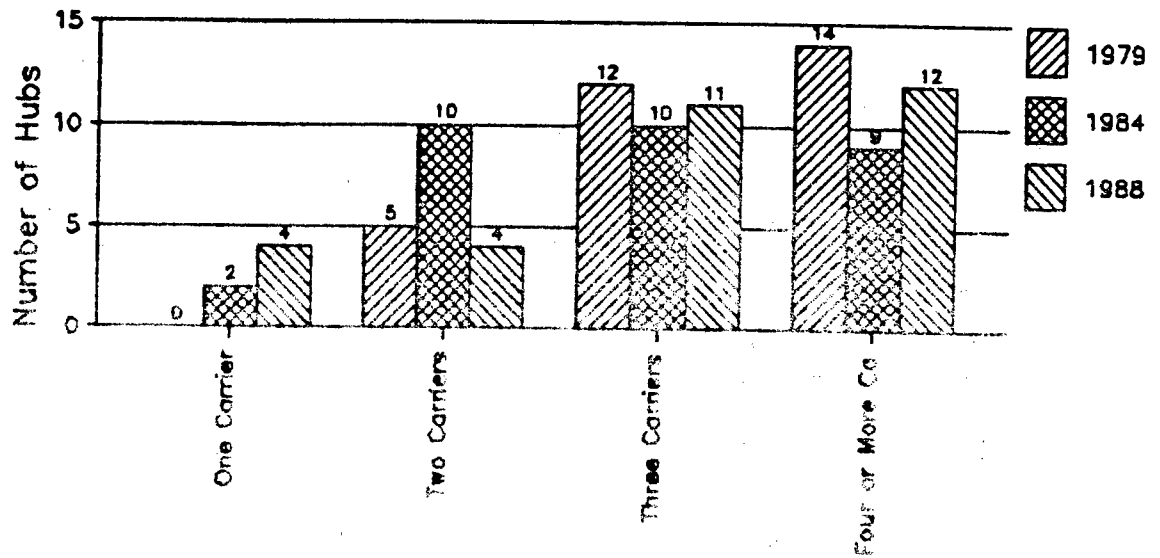
LARGE HUBS BY NUMBER OF COMPETITORS

Month of July, 1979, 1984 and 1988



MEDIUM HUBS BY NUMBER OF COMPETITORS

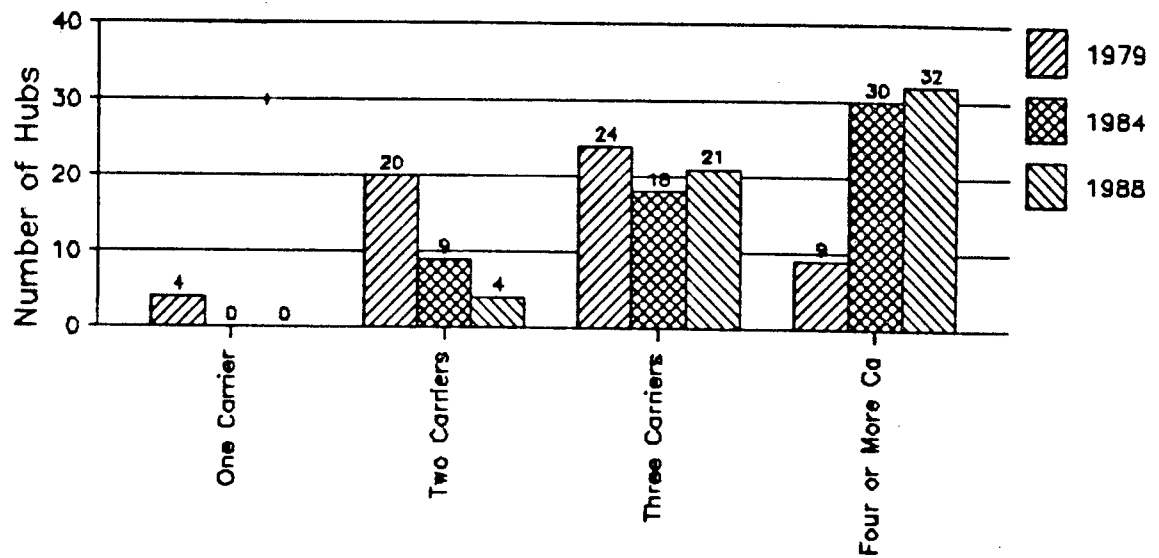
Month of July, 1979, 1984 and 1988



Number of Competitors

SMALL HUBS BY NUMBER OF COMPETITORS

Month of July, 1979, 1984 and 1988



Number of Competitors

PERCENTAGE BREAKDOWN OF HUBS BY NUMBER OF COMPETITIVE CARRIERS
Month of July, 1979, 1984 and 1988

| Number of Competitive Carriers 1/ | Percent at Large Hubs | | Percent at Medium Hubs | | Percent at Small Hubs | |
|--------------------------------------|-----------------------|-------|------------------------|-------|-----------------------|-------|
| | 1979 | 1984 | 1988 | 1979 | 1984 | 1988 |
| 1 | 0.0 | 11.1 | 25.9 | 0.0 | 0.0 | 0.0 |
| 2 | 11.1 | 44.4 | 37.0 | 16.1 | 15.8 | 7.0 |
| 3 | 37.0 | 37.0 | 25.9 | 38.7 | 31.6 | 36.8 |
| 4 or more | 51.9 | 7.4 | 11.1 | 45.2 | 52.6 | 56.1 |
| Total 2/ | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

1/ Competitors are those carriers providing 10 percent or more of total seats available at the hub.
2/ Components may not add to 100.0 due to rounding.

Source: Official Airline Guide, July 1978, July 1984 and July 1988.

CHANGES IN COMPETITORS AT FAA HUBS

Table I-11

Objective: To present a detailed list of the large, medium and small hubs which had increases, no change or decreases in the number of competitors (as measured by a 10% share of seats) and to show the actual competitive carriers in the years 1979 and 1988.

Data Sources: OAG tapes. Hubs classifications based on Airport Activity Statistics.

Observations/Interpretation: Two large hubs, New York and San Francisco/Oakland had an increase in the number of competitors from 1979 to 1988. New York gained one competitor, from 3 to 4, and San Francisco/Oakland gained one, from 2 to 3.

Seven large hubs had no change in number of competitors. These were Atlanta (2), Los Angeles (4), Miami/Ft. Lauderdale (3), Orlando (3), San Diego (4), Seattle (3), and Tampa (3).

Eighteen large hubs had decreases in the number of competitors. Six hubs, Boston, Charlotte, Chicago, Denver, Kansas City and Newark, had a loss of one competitor. Six hubs, Dallas/Ft. Worth, Houston, Las Vegas Minneapolis/St. Paul, Phoenix and Washington had a loss of 2 competitors. Five hubs, Memphis, Philadelphia, Pittsburgh, St. Louis, and Salt Lake City had a loss of 4 competitors.

The results for the 31 medium hubs were somewhat more balanced. Seven had an increase in competitors, 11 had no change and 13 had a loss of competitors. Of the seven hubs which had an increase in competitors, Reno, Nevada gained 3 competitors, Columbus, Ohio and Ontario, California each gained 2 competitors, and El Paso, Ft. Myers, Norfolk and Portland, Oregon each gained one. Of the 13 medium hubs which lost competitors, Baltimore, Maryland and Nashville, Tennessee each lost 3, while Cincinnati, and Dayton each lost two. Albuquerque, Buffalo, Indianapolis, Oklahoma City, Raleigh/Durham, Sacramento, San Antonio, Syracuse and Tulsa each lost one competitor.

The results for the 57 small hubs were quite positive 37 (65 percent) had an increase in the number of competitors. Akron/Canton and Daytona Beach each gained four competitors. Five hubs gained 3 competitors, 12 gained 2 competitors and 18 gained one competitor. Fourteen small hubs showed no change in number of competitors. Six small hubs showed a loss of competitors. Corpus Christi, Texas and Louisville, Kentucky each lost 2 competitors, while Fargo, Greensboro, Palm Springs and Santa Barbara each lost one.

CHANGES IN NUMBER OF COMPETITORS AT LARGE HUBS
July 1979 - July 1988

Large Hubs With An Increase in Number of Competitors*

| | <u>1979 Carriers</u> | <u>1988 Carriers</u> | <u>Change</u> |
|-----------------------|----------------------|----------------------|---------------|
| New York | AA,EA,TW | AA,EA,PA,TW | +1 |
| San Francisco/Oakland | PS,UA | AA,AL,UA | +1 |

Large Hubs With No Change In Number of Competitors*

| | | | |
|----------------------|-------------|-------------|---|
| Atlanta | DL,EA | DL,EA | 0 |
| Los Angeles | AA,PS,UA,WA | AA,AL,DL,UA | 0 |
| Miami/Ft. Lauderdale | DL,EA,NA | DL,EA,PA | 0 |
| Orlando | DL,EA,NA | BN,DL,EA | 0 |
| San Diego | AA,PS,UA,WA | AA,AL,DL,WN | 0 |
| Seattle | NW,UA,WA | AS,NW,UA | 0 |
| Tampa | DL,EA,NA | DL,EA,PI | 0 |

Large Hubs With A Decrease In Number of Competitors*

| | | | |
|----------------------|----------------|----------|----|
| Boston | AA,DL,EA,TW | DL,EA,NW | -1 |
| Charlotte | EA,PI | PI | -1 |
| Chicago | AA,TW,UA | AA,UA | -1 |
| Dallas/Ft. Worth | AA,BN,DL,WN | AA,DL | -2 |
| Denver | CO,FL,UA | CO,UA | -1 |
| Detroit | AA,DL,NC,NW,UA | NW | -4 |
| Houston | CO,NA,TI,WN | CO,WN | -2 |
| Kansas City | BN,TW,UA | BN,EA | -1 |
| Las Vegas | PS,RW,TW,UA,WA | AL,DL,HP | -2 |
| Memphis | AA,BN,DL,SO | NW | -3 |
| Minneapolis/St. Paul | NC,NW,WA | NW | -2 |
| Newark | AA,EA,UA | CO,PI | -1 |
| Philadelphia | AL,DL,EA,TW,UA | AL,EA | -3 |
| Phoenix | AA,RW,TW,WA | HP,WN | -2 |
| Pittsburgh | AL,EA,TW,UA | AL | -3 |
| St. Louis | AA,EA,OZ,TW | TW | -3 |
| Salt Lake City | FL,RW,UA,WA | DL | -3 |
| Washington | AA,EA,TW,UA | EA,UA | -2 |

* Competitors are carriers providing 10% or more of available seats.

Carrier Decoding:

AA = American, AL = USAir, AS = Alaska, BN = Braniff, CO = Continental, DL = Delta, EA = Eastern, FL = Frontier, HP = America West, NA = National, NC = North Central, NW = Northwest, OZ = Ozark, PA = Pan American, PI = Piedmont, PS = Pacific Southwest, RW = Airwest, SO = Southern, TI = Texas Int'l, TW = Trans World, UA = United, WA = Western, WN = Southwest.

Source: Official Airline Guide, July 1979 and July 1988.

CHANGES IN NUMBER OF COMPETITORS AT MEDIUM HUBS
July 1979 - July 1988

Medium Hubs With An Increase In Number of Competitors*

| | <u>1979 Carriers</u> | <u>1988 Carriers</u> | <u>Change</u> |
|---------------|----------------------|----------------------|---------------|
| Columbus, OH | DL,TW | AA,AL,DL,TW | +2 |
| El Paso, TX | AA,CO | AA,CO,WN | +1 |
| Ft. Myers, FL | EA,FE,NA | AA,DL,EA,TW | +1 |
| Norfolk, VA | AL,PI,UA | AA,AL,DL,PI | +1 |
| Ontario, CA | CO,OC,PS | AA,AS,DL,HP,UA | +2 |
| Portland, OR | CO,UA,WA | AA,AS,DL,UA | +1 |
| Reno, NV | UA,WA | AA,AL,DL,HP,UA | +3 |

Medium Hubs With No Change In Number of Competitors*

| | | | |
|-------------------|-------------|-------------|---|
| Austin, TX | BN,CO,TI,WN | AA,CO,DL,WN | 0 |
| Cleveland, OH | AA,UA | AL,CO | 0 |
| Hartford, CT | AL,DL,EA,UA | AA,AL,DL,EA | 0 |
| Jacksonville, FL | DL,EA,NA,QH | AA,DL,EA,PI | 0 |
| Milwaukee, WI | NC,NW | AA,NW | 0 |
| New Orleans, LA | DL,EA,NA | CO,DL,WN | 0 |
| Omaha, NE | BN,EA,FL,UA | AA,HP,NW,UA | 0 |
| Rochester, NY | AA,AL,UA | AA,AL,PI | 0 |
| San Jose, CA | OC,PS,UA | AA,AL,AS | 0 |
| Tucson, AZ | AA,CO,FL,RW | AA,AL,CO,HP | 0 |
| W. Palm Beach, FL | DL,EA,NA | CO,DL,EA | 0 |

Medium Hubs With A Decrease In Number of Competitors*

| | | | |
|--------------------|----------------|-------------|----|
| Albuquerque, NM | CO,FL,TI,TW | AA,DL,WN | -1 |
| Baltimore, MD | AL,DL,EA,UA | PI | -3 |
| Buffalo, NY | AA,AL,EA,UA | AA,AL,CO | -1 |
| Cincinnati, OH | AA,DL,TW | DL | -2 |
| Dayton, OH | AL,DL,TW | PI | -2 |
| Indianapolis, IN | AA,AL,DL,TW | AL,CO,DL | -1 |
| Nashville, TN | AA,AL,BN,SO | AA | -3 |
| Oklahoma City, OK | AA,BN,FL,TW | AA,DL,WN | -1 |
| Raleigh/Durham, NC | DL,EA,PI | AA,PI | -1 |
| Sacramento, CA | OC,PS,UA,WA | AA,AL,UA | -1 |
| San Antonio, TX | AA,BN,CO,EA,WN | AA,CO,DL,WN | -1 |
| Syracuse, NY | AA,AL,EA | AA,PI | -1 |
| Tulsa, OK | AA,BN,CO,TW | AA,DL,WN | -1 |

* Competitors are carriers providing 10% or more of available seats.

Carrier Decoding:

AA = American, AL = USAir, AS = Alaska, BN = Braniff, CO = Continental, DL = Delta, EA = Eastern, FE = Air South, FL = Frontier, HP = America West, NA = National, NC = North Central, NW = Northwest, OC = Air California, OZ = Ozark, PA = Pan American, PI = Piedmont, PS = Pacific Southwest, QH = Air Florida, RW = Airwest, SO = Southern, TI = Texas Int'l, TW = Trans World, UA = United, WA = Western, WN = Southwest

Source: Official Airline Guide, July 1979 and July 1988.

CHANGES IN NUMBER OF COMPETITORS AT SMALL HUBS
July 1979 - July 1988

Small Hubs With An Increase In Number of Competitors*

| | <u>1979 Carriers</u> | <u>1988 Carriers</u> | <u>Change</u> |
|--------------------------------|----------------------|----------------------|---------------|
| Akron/Canton, OH | UA | AA,AL,EA,PI,UA | +4 |
| Albany, NY | AA,AL,EA | AA,AL,PI,UA | +1 |
| Allentown, PA | AL,EA,UA | AL,EA,NW,PI,UA | +2 |
| Billings, MT | FL,NW,WA | CO,DL,NW,UA | +1 |
| Brownsville/ Harlingen, TX | BN,WN | AA,CO,WN | +1 |
| Cedar Rapids, IA | OZ,UA | AA,HP,NW,TW,UA | +3 |
| Charleston, SC | DL,EA,PI | AA,DL,EA,PI,UA | +2 |
| Charleston, WV | AL,PI,UA | AL,DL,PI,UA | +1 |
| Chattanooga, TN | DL,SO | AA,DL,NW,PI | +2 |
| Colorado Springs, CO | BN,CO,FL,JC | AA,CO,DL,HP,TW,UA | +2 |
| Columbia, SC | DL,EA | AA,DL,EA,PI | +2 |
| Daytona Beach, FL | EA | AA,CO,DL,EA,PI | +4 |
| Des Moines, IA | BN,OZ,UA | AA,HP,NW,TW,UA | +2 |
| Eugene, OR | FL,RW,UA | AA,AL,AS,UA | +1 |
| Ft. Wayne, IN | DL,UA,ZW | AA,DL,PI,UA | +1 |
| Fresno, CA | OC,PS,UA | AL,CO,DL,UA | +1 |
| Grand Rapids, MI | NC,UA | AA,NW,PI,UA | +2 |
| Greenville/ Spartanburg, SC | EA,SO | DL,EA,PI | +1 |
| Harrisburg, PA | AL,TW | AA,AL,UA | +1 |
| Huntsville, AL | SO,UA | AA,DL,EA,NW,UA | +3 |
| Long Island/ McArthur, NY | AA,AL,PM | AA,AL,EA,PI | +1 |
| Knoxville, TN | DL,UA | DL,NW,UA | +1 |
| Lexington, KY | DL,EA,PI | AL,DL,PI,TW,UA | +2 |
| Lincoln, NE | FL,UA | HP,TW,UA | +1 |
| Melbourne, FL | EA,NA | AA,DL,EA | +1 |
| Mobile, AL | EA,NA,SO | AA,DL,EA,NW | +1 |
| Portland, ME | DL,QO | AA,CO,DL,EA,UA | +3 |
| Providence, RI | AL,EA | AA,AL,EA | +1 |
| Richmond, VA | EA,PI | AA,AL,DL,PI | +2 |
| Roanoke, VA | PI | DL,PI,UA | +2 |
| Sarasota/Bradenton, FL | EA,NA | AA,CO,DL,EA,TW | +3 |
| Savannah, GA | DL,EA | AA,DL,EA,PI,UA | +3 |
| Shreveport, LA | DL | AA,DL,NW | +2 |
| Sioux Falls, SD | NC,OZ,WA | DL,NW,TW,UA | +1 |
| South Bend, IN | NC,UA | AA,PI,UA | +1 |
| Spokane, WA | NW,RW,UA | AA,DL,NW,UA | +1 |
| Toledo, OH | DL,UA | AA,DL,PI,UA | +2 |

Small Hubs With No Change In Number of Competitors*

| | | | |
|-----------------|-------------|-------------|---|
| Amarillo, TX | BN,TI,TW,WN | AA,CO,DL,WN | 0 |
| Baton Rouge, LA | DL,SO,TI | AA,CO,DL | 0 |
| Birmingham, AL | DL,EA,SO | AA,DL,WN | 0 |
| Boise, ID | GG,RW,UA | AS,DL,UA | 0 |
| Burlington, VT | AL,DL,NE,NO | AL,CO,PI,UA | 0 |

Small Hubs With No Change In Number of Competitors* (continued)

| | | | |
|------------------------|-------------|-------------|---|
| Jackson, MS | DL,SO | AA,DL | 0 |
| Little Rock, AR | AA,DL,FL | AA,DL,WN | 0 |
| Lubbock, TX | BN,CO,TI,WN | AA,DL,HP,WN | 0 |
| Madison, WI | NC,NW,OZ | AA,NW,UA | 0 |
| Midland/Odessa, TX | CO,TI,WN | AA,HP,WN | 0 |
| Moline,IL/Davenport,IA | OZ,UA | TW,UA | 0 |
| Pensacola, FL | EA,NA,QH | DL,EA,PI | 0 |
| Tallahassee, FL | EA,QH,SO | DL,EA,PI | 0 |
| Wichita, KS | BN,CO,FL,TW | AA,CO,TW,UA | 0 |

Small Hubs With A Decrease In Number of Competitors*

| | | | |
|--------------------|----------------|----------------|----|
| Corpus Christi, TX | BN,EA,TB,TI,WN | AA,CO,WN | -2 |
| Fargo, ND | FL,NC,NW | NW,UA | -1 |
| Greensboro, NC | DL,EA,PI | AA,PI | -1 |
| Palm Springs, CA | AA,OC,OO,RW | | |
| | TW,WA | AA,AL,DL,TW,UA | -1 |
| Louisville, KY | AA,AL,DL,EA,PI | AL,DL,PI | -2 |
| Santa Barbara, CA | GW,ID,UA,WI | AA,DL,UA | -1 |

* Competitors are carriers providing 10% or more of available seats.

Carrier Decoding:

AA = American, AL = USAir, AS = Alaska, BN = Braniff, CO = Continental, DL = Delta, EA = Eastern, FL = Frontier, GG = North American, GW = Golden West, HP = America West, ID = Apollo, JC = Rocky Mountain, NA = National, NC = North Central, NW = Northwest, NE = Air New England, OC = Air California, OO = Sun Aire, PA = Pan American, PI = Piedmont, PM = Pilgrim, PS = Pacific Southwest, QH = Air Florida, QO = Bar Harbor, RW = Airwest, SO = Southern, TB = Tejas, TI = Texas Int'l, TW = Trans World, UA = United, WA = Western, WI = Swift, WN = Southwest.

Source: Official Airline Guide, July 1979 and July 1988.

DISTRIBUTION OF POINT CONCENTRATION
BY DOMINANT CARRIER SHARE

Table I-12

Objective: To analyze point concentration by comparing hub enplanements distributed by dominant carrier share. Changes over time indicate how concentration is increasing or decreasing.

Data Sources: DOT Form 41, Schedule T-3.

Observations/Interpretation:

These data show total enplanements at points distributed on the basis of the dominant carrier's share. For example, for calendar year 1988, Piedmont accounted for 90.9 percent of enplanements at Charlotte, so all enplanements at Charlotte are included in the 90 percent or more column of Page 1. Page 2 is a percentage distribution of these data and pages 3 and 4 show cumulative distributions starting with most concentrated (page 3) and least concentrated (page 4) points. Pages 5 and 6 show the distribution of the dominant carrier enplanements.

Concentration is quite different depending on hub size. It has increased considerably at most large hubs and many medium hubs. Concentration has occurred, in part, as a result of added new service to small hubs. As a consequence, concentration at small hubs has declined markedly. As the distribution on page 4 shows, at hubs where a single carrier accounted for less than 50 percent of the enplanements, from 1979 to 1988, the percent of total enplanements declined from 86.9 percent to 66.1 percent at large hubs, while at small hubs total enplanements increased from 47.0 to 77.9 percent.

Point Concentration
Distribution of Total Enplanements
Based on Dominant Carrier Share 1/

| Hub Size and Year | Number of Enplanements (000) | | | | | | | | Total |
|-------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|--------------|---------|
| | 90% or More | 80 to 89.9% | 70 to 79.9% | 60 to 69.9% | 50 to 59.9% | 40 to 49.9% | 30 to 39.9% | Under 30% | |
| Calendar 1988: | | | | | | | | | |
| Large Hubs | 6,619 | 27,161 | 8,088 | — | 65,238 | 64,449 | 41,774 | 102,865 | 316,194 |
| Medium Hubs | — | — | 5,678 | 6,756 | 7,784 | 10,502 | 14,590 | 25,754 | 71,065 |
| Small Hubs | — | 240 | 188 | 1,785 | 4,266 | 7,679 | 9,416 | 5,750 | 29,325 |
| Non-Hubs | 3,049 | 623 | 1,349 | 1,127 | 1,720 | 883 | 740 | — | 9,490 |
| Total | 9,668 | 28,024 | 15,303 | 9,668 | 79,008 | 83,513 | 66,520 | 134,369 | 426,074 |
| Calendar 1984: | | | | | | | | | |
| Large Hubs | — | — | 13,920 | — | 45,244 | 62,707 | 12,221 | 108,612 | 242,704 |
| Medium Hubs | — | — | — | 2,567 | 3,367 | 7,500 | 12,119 | 24,917 | 50,471 |
| Small Hubs | 205 | 467 | 1,259 | 1,709 | 4,548 | 6,788 | 4,850 | 2,637 | 22,461 |
| Non-Hubs | 3,329 | 922 | 929 | 332 | 852 | 1,097 | 729 | — | 8,190 |
| Total | 3,534 | 1,389 | 16,108 | 4,608 | 54,011 | 78,092 | 29,919 | 136,166 | 323,826 |
| Calendar 1979: | | | | | | | | | |
| Large Hubs | — | — | 1,556 | — | 26,034 | 28,420 | 25,890 | 128,873 | 210,773 |
| Medium Hubs | — | — | 382 | 906 | 5,304 | 12,823 | 15,851 | 10,179 | 45,445 |
| Small Hubs | 2,488 | — | 2,575 | 2,291 | 5,544 | 6,949 | 3,565 | 904 | 24,315 |
| Non-Hubs | 5,865 | 964 | 1,132 | 1,399 | 3,291 | 808 | 270 | 105 | 13,834 |
| Total | 8,353 | 964 | 5,645 | 4,596 | 40,173 | 49,000 | 45,576 | 140,061 | 294,367 |

1/ Although distributed based on dominant carrier share, these data reflect total enplanements for all carriers.

SOURCE: DOT Form 41, Schedule T-3.

Point Concentration
Percentage Distribution of Total Explanements
Based on Dominant Carrier Share 1/

| Hub Size and Year | Percent Distribution of Explanements | | | | | | | | Total |
|-------------------|--------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|--------------|---------|
| | 90% or More | 80 to 89.9% | 70 to 79.9% | 60 to 69.9% | 50 to 59.9% | 40 to 49.9% | 30 to 39.9% | Under 30% | |
| Calendar 1988: | | | | | | | | | |
| Large Hubs | 2.1% | 8.6% | 2.6% | — | 20.4% | 20.6% | 13.2% | 32.5% | 100.00% |
| Medium Hubs | — | — | 8.0 | 9.5% | 11.0 | 14.8 | 20.5 | 36.2 | 100.00 |
| Small Hubs | — | 0.8 | 0.6 | 6.1 | 14.5 | 26.2 | 32.1 | 19.6 | 100.00 |
| Non-Hubs | 32.1 | 6.6 | 14.2 | 11.9 | 18.1 | 9.3 | 7.8 | 0.0 | 100.00 |
| Total | 2.3 | 6.6 | 3.6 | 2.3 | 18.5 | 19.6 | 15.6 | 31.5 | 100.00 |
| Calendar 1984: | | | | | | | | | |
| Large Hubs | — | — | 5.7 | — | 18.6 | 25.8 | 5.0 | 44.8 | 100.00 |
| Medium Hubs | — | — | — | 5.1 | 6.7 | 14.9 | 24.0 | 49.4 | 100.00 |
| Small Hubs | 0.9 | 2.1 | 5.6 | 7.6 | 20.2 | 30.2 | 21.6 | 11.7 | 100.00 |
| Non-Hubs | 40.6 | 11.3 | 11.3 | 4.1 | 10.4 | 13.4 | 8.9 | — | 100.00 |
| Total | 1.1 | 0.4 | 5.0 | 1.4 | 16.7 | 24.1 | 9.2 | 42.0 | 100.00 |
| Calendar 1979: | | | | | | | | | |
| Large Hubs | — | — | 0.7 | — | 12.4 | 13.5 | 12.3 | 61.1 | 100.00 |
| Medium Hubs | — | — | 0.8 | 2.0 | 11.7 | 28.2 | 34.9 | 22.4 | 100.00 |
| Small Hubs | 10.2 | — | 10.6 | 9.4 | 22.8 | 28.6 | 14.7 | 3.7 | 100.00 |
| Non-Hubs | 42.4 | 7.0 | 8.2 | 10.1 | 23.8 | 5.8 | 2.0 | 0.8 | 100.00 |
| Total | 2.8 | 0.3 | 1.9 | 1.6 | 13.6 | 16.6 | 15.5 | 47.6 | 100.00 |

1/ Although distributed based on dominant carrier share, these data reflect total explanements for all carriers.

SOURCE: DOT Form 41, Schedule T-3.

Point Concentration
Cumulative Percent Distribution of Total Enplanements ^{1/}
(Starting with most concentrated points)

| <u>Hub Size and Year</u> | <u>90% or More</u> | <u>80% or More</u> | <u>70% or More</u> | <u>60% or More</u> | <u>50% or More</u> | <u>40% or More</u> | <u>30% or More</u> |
|--------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Large Hubs: | | | | | | | |
| 1988 | 2.1% | 10.7% | 13.3% | 13.3% | 33.9% | 54.3% | 67.5% |
| 1984 | — | — | 5.7 | 5.7 | 24.3 | 50.1 | 55.1 |
| 1979 | — | — | 0.7 | 0.7 | 13.1 | 26.6 | 38.9 |
| Medium Hubs: | | | | | | | |
| 1988 | — | — | 8.0 | 17.5 | 28.5 | 43.3 | 63.8 |
| 1984 | — | — | — | 5.1 | 11.8 | 26.7 | 50.7 |
| 1979 | — | — | 0.8 | 2.8 | 14.5 | 42.7 | 77.6 |
| Small Hubs: | | | | | | | |
| 1988 | — | 0.8 | 1.4 | 7.5 | 22.0 | 48.2 | 80.3 |
| 1984 | 0.9 | 3.0 | 8.6 | 16.2 | 36.4 | 66.6 | 88.2 |
| 1979 | 10.2 | 10.2 | 0.7 | 30.2 | 53.0 | 81.6 | 96.3 |
| Non Hubs: | | | | | | | |
| 1988 | 32.1 | 38.7 | 52.9 | 64.8 | 82.9 | 92.2 | 100.0 |
| 1984 | 40.6 | 51.9 | 63.2 | 67.3 | 77.7 | 91.1 | 100.0 |
| 1979 | 42.4 | 49.4 | 57.6 | 67.7 | 91.5 | 97.3 | 99.3 |
| Total: | | | | | | | |
| 1988 | 2.3 | 8.9 | 12.5 | 14.8 | 33.3 | 52.9 | 68.5 |
| 1984 | 1.1 | 1.5 | 6.5 | 7.9 | 24.6 | 48.7 | 57.9 |
| 1979 | 2.8 | 3.1 | 5.0 | 6.6 | 20.2 | 36.8 | 52.3 |

^{1/} Although distributed based on dominant carrier share, these data reflect total enplanements for all carriers.

SOURCE: DOT Form 41, Schedule T-3.

Point Concentration
Cumulative Percent Distribution of Total Enplanements ^{1/}
(Starting with least concentrated points)

| Hub Size and Year | Less Than | | | | | | |
|-------------------|-----------|-------|-------|-------|-------|-------|-------|
| | 30% | 40% | 50% | 60% | 70% | 80% | 90% |
| Large Hubs: | | | | | | | |
| 1988 | 32.5% | 45.7% | 66.1% | 86.7% | 86.7% | 89.3% | 97.9% |
| 1984 | 44.8 | 49.8 | 75.6 | 94.2 | 94.2 | 100.0 | |
| 1979 | 61.1 | 73.4 | 86.9 | 99.3 | 99.3 | 100.0 | |
| Medium Hubs: | | | | | | | |
| 1988 | 36.2 | 56.7 | 71.5 | 82.5 | 92.0 | 100.0 | |
| 1984 | 49.4 | 73.4 | 88.3 | 95.0 | 100.0 | | |
| 1979 | 22.4 | 57.3 | 85.5 | 97.2 | 99.2 | 100.0 | |
| Small Hubs: | | | | | | | |
| 1988 | 19.6 | 51.7 | 77.9 | 92.4 | 98.5 | 99.1 | 100.0 |
| 1984 | 11.7 | 33.3 | 63.5 | 83.7 | 91.3 | 96.9 | 99.0 |
| 1979 | 3.7 | 18.4 | 47.0 | 69.8 | 79.2 | 89.8 | 89.8 |
| Non Hubs: | | | | | | | |
| 1988 | 0.0 | 7.8 | 17.1 | 35.5 | 47.4 | 61.6 | 68.2 |
| 1984 | 0.0 | 8.9 | 22.3 | 32.7 | 36.8 | 48.1 | 59.4 |
| 1979 | 0.8 | 2.8 | 8.6 | 32.4 | 42.5 | 50.7 | 57.7 |
| Total: | | | | | | | |
| 1988 | 31.5 | 47.1 | 66.7 | 85.2 | 87.5 | 91.1 | 97.7 |
| 1984 | 42.0 | 51.2 | 75.3 | 92.0 | 93.4 | 98.4 | 98.8 |
| 1979 | 47.6 | 63.1 | 79.7 | 93.3 | 94.9 | 96.8 | 97.1 |

^{1/} Although distributed based on dominant carrier share, these data reflect total enplanements for all carriers.

SOURCE: DOT Form 41, Schedule T-3.

Point Concentration
Distribution of Explanements
Based on Dominant Carrier Share

| Hub Size and Year | Number of Explanements for Dominant Carriers (000) | | | | | | | | Other Carrier's Explanements 1/ Total | |
|-------------------|--|----------------|----------------|----------------|----------------|----------------|----------------|--------------|--|---------|
| | 90% or More | 80 to 89.9% | 70 to 79.9% | 60 to 69.9% | 50 to 59.9% | 40 to 49.9% | 30 to 39.9% | Under 30% | | |
| Calendar 1988: | | | | | | | | | | |
| Large Hubs | 6,018 | 22,589 | 6,337 | — | 36,930 | 28,509 | 14,537 | 21,531 | 179,743 | 316,194 |
| Medium Hubs | — | — | 4,358 | 4,436 | 4,358 | 4,519 | 4,876 | 6,333 | 42,185 | 71,065 |
| Small Hubs | — | 212 | 139 | 1,109 | 2,328 | 3,482 | 3,254 | 1,429 | 17,371 | 29,325 |
| Non-Hubs | 3,012 | 541 | 1,024 | 714 | 950 | 392 | 266 | 0 | 2,592 | 9,490 |
| Total | 9,030 | 23,342 | 11,858 | 6,259 | 44,566 | 36,902 | 22,933 | 29,293 | 241,891 | 426,074 |
| Calendar 1984: | | | | | | | | | | |
| Large Hubs | — | — | 10,401 | — | 23,769 | 27,828 | 3,946 | 23,796 | 152,964 | 242,704 |
| Medium Hubs | — | — | — | 1,567 | 1,836 | 3,280 | 4,199 | 6,195 | 33,394 | 50,471 |
| Small Hubs | 199 | 394 | 941 | 1,074 | 2,468 | 3,114 | 1,711 | 627 | 11,932 | 22,461 |
| Non-Hubs | 3,288 | 780 | 707 | 211 | 469 | 502 | 272 | — | 1,962 | 8,190 |
| Total | 3,487 | 1,174 | 12,049 | 2,852 | 28,542 | 34,724 | 10,128 | 30,618 | 200,252 | 323,826 |
| Calendar 1979: | | | | | | | | | | |
| Large Hubs | — | — | 1,138 | — | 13,110 | 11,864 | 8,720 | 31,359 | 144,582 | 210,773 |
| Medium Hubs | — | — | 290 | 557 | 2,929 | 5,686 | 5,807 | 2,603 | 27,573 | 45,445 |
| Small Hubs | 2,366 | — | 1,951 | 1,443 | 3,084 | 3,226 | 1,264 | 264 | 10,716 | 24,315 |
| Non-Hubs | 5,808 | 834 | 846 | 900 | 1,760 | 377 | 89 | 30 | 3,191 | 13,834 |
| Total | 8,174 | 834 | 4,225 | 2,900 | 20,883 | 21,153 | 15,880 | 34,256 | 186,062 | 294,367 |

1/ Total explanements of the non-dominant carriers.

SOURCE: DOT Form 41, Schedule T-3.

Point Concentration
Percentage Distribution of Explanements
Based on Dominant Carrier Share

| Hub Size and Year | Percent Distribution of Explanements for Dominant Carrier Share | | | | | | | | Other Carrier's Share 1/ | Total |
|-------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-----------|--------------------------|--------|
| | 90% or More | 80 to 89.9% | 70 to 79.9% | 60 to 69.9% | 50 to 59.9% | 40 to 49.9% | 30 to 39.9% | Under 30% | | |
| Calendar 1988: | | | | | | | | | | |
| Large Hubs | 1.9% | 7.1% | 2.0% | — | 11.7% | 9.0% | 4.6% | 6.8% | 56.8% | 100.0% |
| Medium Hubs | — | — | 6.1 | 6.2 | 6.1 | 6.4 | 6.9 | 8.9 | 59.4 | 100.0 |
| Small Hubs | — | 0.7 | 0.5 | 3.8 | 7.9 | 11.9 | 11.1 | 4.9 | 59.2 | 100.0 |
| Non-Hubs | 31.7 | 5.7 | 10.8 | 7.5 | 10.0 | 4.1 | 2.8 | — | 27.3 | 100.0 |
| Total | 2.1 | 5.5 | 2.8 | 1.5 | 10.5 | 8.7 | 5.4 | 6.9 | 56.8 | 100.0 |
| Calendar 1984: | | | | | | | | | | |
| Large Hubs | — | — | 4.3 | — | 9.8 | 11.5 | 1.6 | 9.8 | 63.0 | 100.0 |
| Medium Hubs | — | — | — | 3.1 | 3.6 | 6.5 | 8.3 | 12.3 | 66.2 | 100.0 |
| Small Hubs | 0.9 | 1.8 | 4.2 | 4.6 | 11.0 | 13.9 | 7.6 | 2.8 | 53.1 | 100.0 |
| Non-Hubs | 40.1 | 9.5 | 8.6 | 2.6 | 5.7 | 6.1 | 3.3 | — | 24.0 | 100.0 |
| Total | 1.1 | 0.4 | 3.7 | 0.9 | 8.8 | 10.7 | 3.1 | 9.5 | 61.8 | 100.0 |
| Calendar 1979: | | | | | | | | | | |
| Large Hubs | — | — | 0.5 | — | 6.2 | 5.6 | 4.1 | 14.9 | 68.6 | 100.0 |
| Medium Hubs | — | — | 0.6 | 1.2 | 6.4 | 12.5 | 12.8 | 5.7 | 60.7 | 100.0 |
| Small Hubs | 9.7 | — | 8.0 | 5.9 | 12.7 | 13.3 | 5.2 | 1.1 | 44.1 | 100.0 |
| Non-Hubs | 42.0 | 6.0 | 6.1 | 6.5 | 12.7 | 2.7 | 0.6 | 0.2 | 23.1 | 100.0 |
| Total | 2.8 | 0.3 | 1.4 | 1.0 | 7.1 | 7.2 | 5.4 | 11.6 | 63.2 | 100.0 |

1/ Total explanements of the non-dominant carriers.

SOURCE: DOT Form 41, Schedule T-3.

CHANGES IN ENPLANEMENTS AT DOMESTIC POINTS

Table I-13 and I-14

Objective: To show the distribution of domestic airports by change in domestic enplanements for the 1979-1988 and 1984-1988 periods.

Data Sources: DOT Form 41, Schedule T-3 (Domestic) for large certificated carriers and DOT Form 298-C for commuter carriers. Data are limited to airports in the 48 contiguous states.

Observations/Interpretation: For the 1979-1988 comparison, 521 airports were included. 249 airports (48 percent) had a decrease in enplanements. (See Appendix for a detailed listing of enplanements for all airports.) 272 airports (52 percent) had an increase in enplanements, 139 of which exceeded 50 percent. The aggregate increase in enplanements at all airports was 50.0 percent from 1979 to 1988.

For the 1984-1988 comparison, 314 airports (61 percent) had an increase in enplanements, including 120 which had an increase exceeding 50 percent. 202 airports (39 percent) had a decrease in enplanements. The aggregate increase in enplanements at all airports was 31.4 percent from 1984 to 1988.

From 1979 to 1984 total enplanements grew 14.3 percent, or at a compound annual rate of 2.7 percent. From 1984 to 1988 total enplanements grew 31.4 percent for a compound annual rate of 7.1 percent.

Appendices A, B, C and D list the airports with reported traffic in the years 1979, 1984, and 1988.

CHANGES IN ENPLANEMENTS AT DOMESTIC AIRPORTS
1979-1988

Airports With An Increase in Enplanements, 1979-1988

| <u>Percent Increase</u> | <u>Number</u> |
|-------------------------|---------------|
| Less than 10.0% | 36 |
| 10.0 - 49.9% | 97 |
| 50.0% and over | <u>139</u> |
| Total | 272 |

Airports With A Decrease in Enplanements, 1979-1988

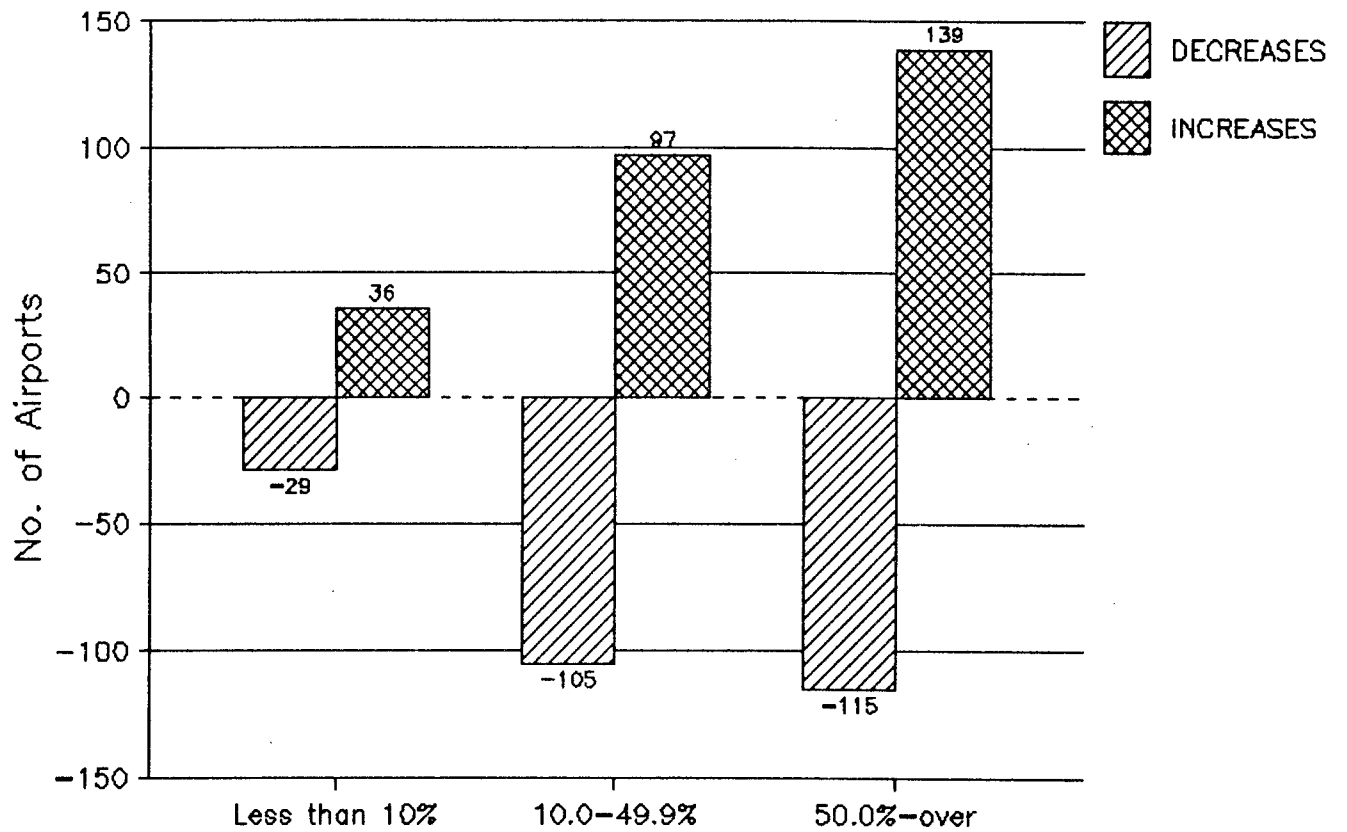
| <u>Percent Decrease</u> | <u>Number</u> |
|-------------------------|---------------|
| Less than 10.0% | 29 |
| 10.0 - 49.9% | 105 |
| 50.0 - 99.9% | <u>115</u> |
| Total | 249 |

Airports Served in 1988 but not in 1979: 48
Airports Served in 1979 but not in 1988: 193
Total Airports Served in 1979 and/or 1988: 762

Note: Includes only airports served in both 1979 and 1988.

Source: DOT Form 41, Schedule T-3 (Domestic) and DOT Form 298-C.
Data are limited to airports in the 48 contiguous states.

ENPLANEMENT CHANGES AT DOMESTIC AIRPORTS 1979 vs. 1988



CHANGES IN ENPLANEMENTS AT DOMESTIC AIRPORTS
1984-1988

Airports With An Increase in Enplanements, 1984-1988

| <u>Percent Increase</u> | <u>Number</u> |
|-------------------------|---------------|
| Less than 10.0% | 38 |
| 10.0 - 49.9% | 156 |
| 50.0% and over | <u>120</u> |
| Total | 314 |

Airports With A Decrease in Enplanements, 1984-1988

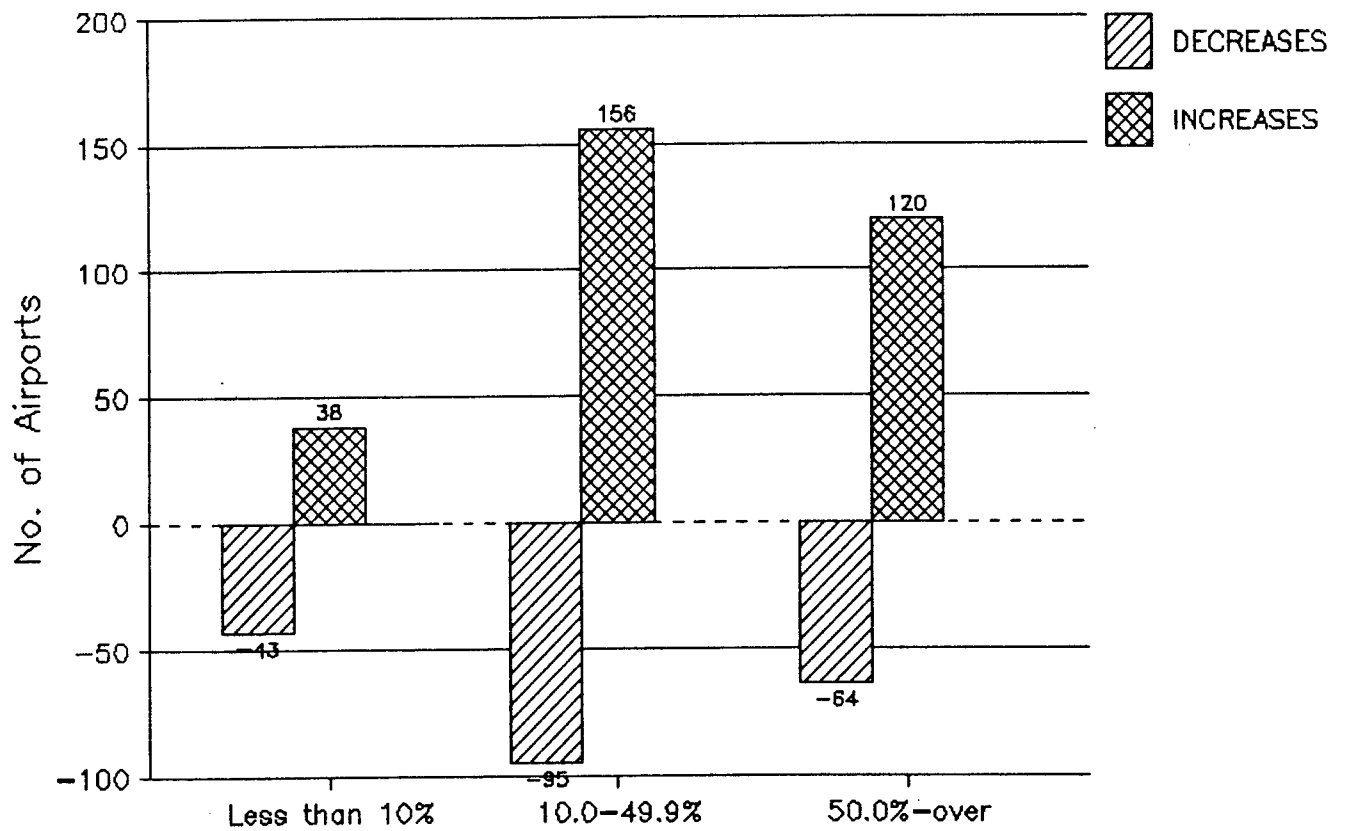
| <u>Percent Decrease</u> | <u>Number</u> |
|-------------------------|---------------|
| Less than 10.0% | 43 |
| 10.0 - 49.9% | 95 |
| 50.0 - 99.9% | <u>64</u> |
| Total | 202 |

Airports Served in 1988 but not in 1984: 53
 Airports Served in 1984 but not in 1988: 77
 Total Airports Served in 1979 and/or 1988: 646

Note: Includes only airports served in both 1984 and 1988.

Source: DOT Form 41, Schedule T-3 (Domestic) and DOT Form 298-C.
 Data are limited to airports in the 48 contiguous states.

ENPLANEMENT CHANGES AT DOMESTIC AIRPORTS 1984 vs. 1988



CHANGES IN SERVICE FREQUENCY AT DOMESTIC POINTS, 1979-1988

Tables I-15 and I-16

Objective: To show the distribution of points by percent change in frequency between July 1979 and July 1988. The distribution has a breakdown of 40 seats and under and over 40 seats to identify how larger and smaller points were affected.

Data Sources: OAG tapes.

Observations/Interpretation: A total of 497 points are included in the July 1979/July 1988 comparison. Of this total 227, or 45.7 percent, had decreases in weekly frequency for this period. 181 of these were small points served by aircraft averaging 40 seats or under and 46 averaged more than 40 seats. A total of 270 points, or 54.3 percent, had increases in weekly frequency. The 270 were almost evenly divided between those served with aircraft with 40 or fewer seats (133 points) and more than 40 seats (137 points). These data indicate that most of the points which have had reductions in weekly frequency were points served by smaller aircraft, by a factor of almost 4 to 1. Increases in frequency were split equally between smaller and larger points. Almost 75 percent of the large aircraft points had frequency improvements (137 out of 183).

CHANGES IN FREQUENCY AT DOMESTIC POINTS
July 1979 - July 1988

Points With An Increase in Frequency, July 1979 - July 1988

| <u>Percent Increase</u> | <u>Number</u> | <u>40 Seats and Under</u> | <u>Over 40 Seats</u> |
|-------------------------|---------------|-------------------------------|--------------------------|
| Less than 10%* | 38 | 20 | 18 |
| 10.0 - 50.0% | 101 | 42 | 59 |
| 50.1 - 100.0% | 79 | 36 | 43 |
| 100.1% & over | <u>52</u> | <u>35</u> | <u>17</u> |
| Total | 270 | 133 | 137 |

Points With a Decrease in Frequency, July 1979 - July 1988

| <u>Percent Decrease</u> | <u>Number</u> | <u>40 Seats and Under</u> | <u>Over 40 Seats</u> |
|-------------------------|---------------|-------------------------------|--------------------------|
| Less than 10% | 27 | 18 | 9 |
| 10.0 - 50.0% | 140 | 110 | 30 |
| 50.1 - 99.9% | <u>60</u> | <u>53</u> | <u>7</u> |
| Total | 227 | 181 | 46 |
| <u>All Points</u> | 497 | 314 | 183 |

* Includes points with no change in frequency. Classification of points by average seating capacity is based on July 1988. Includes only points served in both years.

Source: Official Airline Guide, July 1979 and July 1988.

PERCENT DISTRIBUTION OF DOMESTIC POINTS
BY CHANGE IN FREQUENCY
July 1979 - July 1988

| | <u>Percent of Total Points</u> | | |
|-----------------------|--------------------------------|-------------------------------|--------------------------|
| | <u>Number</u> | <u>40 Seats and under</u> | <u>Over 40 Seats</u> |
| <u>Increase of --</u> | | | |
| Less than 10% | 7.6 | 6.4 | 9.8 |
| 10.0 - 50.0% | 20.3 | 13.4 | 32.2 |
| 50.1 - 100.0% | 15.9 | 11.5 | 23.5 |
| 100.1% & over | <u>10.5</u> | <u>11.1</u> | <u>9.3</u> |
| Total | 54.3 | 42.4 | 74.9 |
| <u>Decrease of --</u> | | | |
| Less than 10% | 5.4 | 5.7 | 4.9 |
| 10.0 - 50.0% | 28.2 | 35.0 | 16.4 |
| 50.1% - 99.9% | <u>12.1</u> | <u>16.9</u> | <u>3.8</u> |
| Total | 45.7 | 57.6 | 25.1 |
| <u>All Points</u> | 100.0 | 100.0 | 100.0 |

Source: Table I-15.

CHANGES IN SERVICE FREQUENCY AT DOMESTIC POINTS, 1984-1988

Table I-17 and I-18

Objective: To show the distribution of points by percent change in frequency between July 1984 and July 1988. The distribution has a breakdown of 40 seats and under and over 40 seats to identify how larger and smaller points were affected.

Data Sources: OAG tapes.

Observations/Interpretation: A total of 494 points are included in the July 1984/July 1988 comparison. Of this total, 233, or 47.1 percent, had decreases in weekly frequency for this period. 159 of these were served by aircraft averaging 40 seats or under and 74 averaged more than 40 seats. A total of 261 points, or 52.8 percent, had increases in weekly frequency. Of the 261 points, 152 were served by aircraft with 40 seats and under and 109 were served by aircraft with more than 40 seats. As in the 1979-1988 comparison, most points with decreases in frequency were points served by small aircraft.

CHANGES IN FREQUENCY AT DOMESTIC POINTS
July 1984 - July 1988

Points With An Increase in Frequency, July 1984 - July 1988

| <u>Percent Increase</u> | <u>Number</u> | <u>40 Seats and Under</u> | <u>Over 40 Seats</u> |
|-------------------------|---------------|-------------------------------|--------------------------|
| Less than 10%* | 58 | 40 | 18 |
| 10.0 - 50.0% | 128 | 65 | 63 |
| 50.1 - 100.0% | 54 | 34 | 20 |
| 100.1% & over | <u>21</u> | <u>13</u> | <u>8</u> |
| Total | 261 | 152 | 109 |

Points With a Decrease in Frequency, July 1984 - July 1988

| <u>Percent Decrease</u> | <u>Number</u> | <u>40 Seats and Under</u> | <u>Over 40 Seats</u> |
|-------------------------|---------------|-------------------------------|--------------------------|
| Less than 10% | 39 | 16 | 23 |
| 10.0 - 50.0% | 152 | 107 | 45 |
| 50.1% - 99.9% | <u>42</u> | <u>36</u> | <u>6</u> |
| Total | 233 | 159 | 74 |
| <u>All Points</u> | 494 | 311 | 183 |

* Includes points with no change in frequency. Classification of points by average seating capacity is based on July 1988. Includes only points served in both years.

Source: Official Airline Guide, July 1984 and July 1988.

PERCENT DISTRIBUTION OF DOMESTIC POINTS
BY CHANGE IN FREQUENCY
July 1984 - July 1988

| | <u>Percent of Total Points</u> | | |
|-----------------------|--------------------------------|-------------------------------|--------------------------|
| | <u>Number</u> | <u>40 Seats and under</u> | <u>Over 40 Seats</u> |
| <u>Increase of --</u> | | | |
| Less than 10% | 11.7 | 12.9 | 9.8 |
| 10.0 - 50.0% | 25.9 | 20.9 | 34.4 |
| 50.1 - 100.0% | 10.9 | 10.9 | 10.9 |
| 100.1% & over | <u>4.3</u> | <u>4.2</u> | <u>4.4</u> |
| Total | 52.8 | 48.9 | 59.6 |
| <u>Decrease of --</u> | | | |
| Less than 10% | 7.9 | 5.1 | 12.6 |
| 10.0 - 50.0% | 30.8 | 34.4 | 24.6 |
| 50.1% - 99.9% | <u>8.5</u> | <u>11.6</u> | <u>3.3</u> |
| Total | 47.2 | 51.1 | 40.4 |
| <u>All Points</u> | 100.0 | 100.0 | 100.0 |

Source: Table I-17.

COMPARISON OF SINGLE-PLANE MARKETS SERVED, 1979-1988

Table I-19

Objective: To trace all single-plane markets of July 1979 to show the competitive status of their service in July 1988.

Data Sources: OAG tapes.

Observation/Interpretation: Of the 7,748 single-plane markets served in July 1979 and/or July 1988, 2,434, or 31.4 percent, were not served in 1988, 1,515 (19.6 percent) were served by the same number of carriers in both periods; 547 (7.1 percent) were served by fewer carriers in 1988; and 3,252 (42.0 percent) were served by more carriers in 1988 than in 1979.

If only the 5,400 single-plane markets served in July 1979 are considered, the breakdown is: 2,434 (45.1 percent) not served in 1988; 1,515 (28.1 percent) served by the same number of carriers; 547 (10.1 percent) served by fewer carriers; and 904 (16.7 percent) served by more carriers in 1988.

The table also summarizes the data for markets which had competitive service in 1979, i.e., were served by two or more carriers. There were 1,458 such markets and the 1988 breakdown for them is as follows: 178 (12.2 percent) not served in 1988; 371 (25.4 percent) served by the same number of carriers in both years; 547 (37.5 percent) served by fewer carriers; and 362 (24.8 percent) served by more carriers.

This table demonstrates the dramatic change in the domestic route structures. For example, of the 3,942 single-carrier markets which received service under a linear route structure in July 1979, 2,256, or 57 percent, were not receiving service nine years later under a hub and spoke route structure. But in July 1988, there were 2,348 "new" markets (mainly spoke to hub segments) which were receiving service and which were not being served in July 1979. Most of the markets in these groups are commuter carrier markets at the low end of the spectrum in terms of passengers.

Virtually all of the 538 markets which were served by three or more carriers in 1979 continued to receive service in 1988, although about half (49.8 percent) were served by fewer carriers in 1988.

SERVICE CHANGES IN MARKETS SERVED IN JULY 1979
July 1979 - July 1988

| Number of Carrier Serving, July 1979 | Total Markets | Number of Markets, July 1988 | | | | Percent of Total Markets | | | |
|--|------------------|------------------------------|-------------------------|-------------------|------------------|--------------------------|-------------------------|-------------------|------------------|
| | | Not Served | Same No. of Carriers | Fewer Carriers | More Carriers | Not Served | Same No. of Carriers | Fewer Carriers | More Carriers |
| 0 | 2,348 | -- | -- | -- | 2,348 | -- | -- | -- | 100.0 |
| 1 | 3,942 | 2,256 | 1,144 | -- | 542 | 57.2 | 29.0 | -- | 13.7 |
| 2 | 920 | 157 | 258 | 279 | 226 | 17.1 | 28.0 | 30.3 | 24.6 |
| 3 | 322 | 18 | 75 | 151 | 78 | 5.6 | 23.3 | 46.9 | 24.2 |
| 4 | 116 | 3 | 22 | 57 | 34 | 2.6 | 19.0 | 49.1 | 29.3 |
| 5 | 52 | 0 | 10 | 28 | 14 | 0.0 | 19.2 | 53.8 | 26.9 |
| 6 | 22 | 0 | 3 | 12 | 7 | 0.0 | 13.6 | 54.5 | 31.8 |
| 7 | 13 | 0 | 2 | 10 | 1 | 0.0 | 15.4 | 76.9 | 7.7 |
| 8 or more | 13 | 0 | 1 | 10 | 2 | 0.0 | 7.7 | 76.9 | 15.4 |
| Total, markets served in July 1979 and/or July 1988 | 7,748 | 2,434 | 1,515 | 547 | 3,252 | 31.4 | 19.6 | 7.1 | 42.0 |
| Total, markets served in July 1979 | 5,400 | 2,434 | 1,515 | 547 | 904 | 45.1 | 28.1 | 10.1 | 16.7 |
| Total, markets served by 2 or more carriers in July 1979 | 1,458 | 178 | 371 | 547 | 362 | 12.2 | 25.4 | 37.5 | 24.8 |

Source: Official Airline Guide, July 1979 and July 1988.

COMPETITIVE STATUS OF SINGLE-PLANE MARKETS SERVED, 1979-1988

Table I-20

Objective: To trace the competitive status of single-plane markets served in July 1979 to July 1988. In matrix form, the table compares the number of carriers serving the markets in 1979 with the number serving in 1988.

Data Sources: OAG tapes.

Observations/Interpretation: This is a backup table to Table I-19, which summarizes the data here. This table shows, for example, that of 3,942 single-carrier markets in July, 1979, 2,256 were not served in July 1988, 1,144 were still served by one carrier, 376 were served by 2 carriers, 117 by 3 carriers, 38 by 4 carriers, 4 by 5 carriers, 6 by 6 carriers, and 1 by 7 carriers. A total of 2,348 markets were served in July 1988 but not in July 1979. The following shows the changes in the number of markets by number of carriers providing single-plane service:

| Number of Carriers | Number of Single-Plane Markets | | Change |
|----------------------------------|-----------------------------------|-----------|-----------|
| | July 1979 | July 1988 | |
| 1 | 3,942 | 3,481 | -461 |
| 2 | 920 | 1,054 | 134 |
| 3 | 322 | 413 | 91 |
| 4 | 116 | 192 | 76 |
| 5 | 52 | 83 | 31 |
| 6 | 22 | 45 | 23 |
| 7 | 13 | 22 | 9 |
| 8 or more | <u>13</u> | <u>24</u> | <u>11</u> |
| Subtotal, Competitive Markets | 1,458 | 1,833 | 375 |
| Total | 5,400 | 5,314 | -86 |

Except for monopoly markets, which decreased from 3,942 to 3,481, all categories of markets showed increases. While overall the total number of markets receiving single-plane service was down 1.6 percent (from 5,400 to 5,314), the decrease was entirely attributable to the decline in monopoly markets. Virtually all of these were either commuter markets or local service markets served on linear patterns in 1979 which were unrelated to actual passenger demand.

DISTRIBUTION OF MARKETS SERVED BY NUMBER
OF PARTICIPANTS
July 1979 and July 1988

| Number of Carriers Serving in 1979 | Number of Carriers Serving in 1988 | | | | | | | | Total |
|---|------------------------------------|-------|-------|-----|-----|----|----|----|-------|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8+ |
| 0 | 0 | 1,981 | 301 | 49 | 14 | 3 | 0 | 0 | 0 |
| 1 | 2,256 | 1,144 | 376 | 117 | 38 | 4 | 6 | 1 | 0 |
| 2 | 157 | 279 | 258 | 130 | 59 | 26 | 7 | 3 | 1 |
| 3 | 18 | 63 | 88 | 75 | 41 | 19 | 10 | 5 | 3 |
| 4 | 3 | 12 | 19 | 26 | 22 | 15 | 12 | 2 | 5 |
| 5 | 0 | 2 | 7 | 10 | 9 | 10 | 5 | 5 | 4 |
| 6 | 0 | 0 | 3 | 3 | 4 | 2 | 3 | 2 | 5 |
| 7 | 0 | 0 | 1 | 2 | 3 | 3 | 1 | 2 | 1 |
| 8 or more | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 2 | 5 |
| Total | 2,434 | 3,481 | 1,054 | 413 | 192 | 83 | 45 | 22 | 24 |
| | | | | | | | | | 7,748 |

Note: Limited to 48 Contiguous states.

Source: Official Airline Guide, July 1979 and July 1988.

COMPARISON OF NONSTOP MARKETS SERVED, 1979-1988

Table I-21

Objective: To trace all nonstop markets of July 1979 to show the competitive status of their service in July 1988.

Data Sources: OAG tapes.

Observations/Interpretation: Of the 3,420 nonstop markets served in July 1979 and/or July 1988, 967, or 28.3 percent, were not served in 1988, 908 (26.5 percent) were served by the same number of nonstop carriers in both periods; 334 (9.8 percent) were served by fewer nonstop carriers in 1988; and 1,211 (35.4 percent) were served by more nonstop carriers in 1988 than in 1979.

Considering only the 2,614 markets served in July 1979, the breakdown is: 967 (37.0 percent) not served in 1988; 908 (34.7 percent) were served by the same number of nonstop carriers; 334 (12.8 percent) served by fewer nonstop carriers; and 405 (15.5 percent) served by more nonstop carriers in 1988.

The table also summarizes the data for markets which had competitive nonstop service in 1979, i.e., were served by two or more nonstop carriers. There were 809 such markets and the 1988 breakdown for them is as follows: 76 (9.4 percent) not served in 1988; 256 (31.6 percent) served by the same number of nonstop carriers in both years; 334 (41.3 percent) served by fewer nonstop carriers; and 143 (17.7 percent) served by more nonstop carriers.

SERVICE CHANGES IN NONSTOP MARKETS SERVED IN JULY 1979
July 1979 - July 1988

| Number of Carrier Serving, July 1979 | Total Markets | Number of Markets, July 1988 | | | | Percent of Total Markets | | | |
|--|------------------|------------------------------|-------------------------|-------------------|------------------|--------------------------|-------------------------|-------------------|------------------|
| | | Not Served | Same No. of Carriers | Fewer Carriers | More Carriers | Not Served | Same No. of Carriers | Fewer Carriers | More Carriers |
| 0 | 806 | -- | -- | -- | 806 | -- | -- | -- | 100.0 |
| 1 | 1,805 | 891 | 652 | -- | 262 | 49.4 | 36.1 | -- | 14.5 |
| 2 | 580 | 69 | 212 | -- | 102 | 11.9 | 36.6 | 34.0 | 17.6 |
| 3 | 142 | 6 | 29 | 197 | 28 | 4.2 | 20.4 | 55.6 | 19.7 |
| 4 | 48 | 1 | 10 | 79 | 6 | 2.1 | 20.8 | 64.6 | 12.5 |
| 5 | 19 | 0 | 5 | 11 | 3 | 0.0 | 26.3 | 57.9 | 15.8 |
| 6 | 9 | 0 | 0 | 8 | 1 | 0.0 | 0.0 | 88.9 | 11.1 |
| 7 | 4 | 0 | 0 | 3 | 1 | 0.0 | 0.0 | 75.0 | 25.0 |
| 8 or more | 7 | 0 | 0 | 5 | 2 | 0.0 | 0.0 | 71.4 | 28.6 |
| Total, Markets served in July 1979 and/or July 1988 | 3,420 | 967 | 908 | 334 | 1,211 | 28.3 | 26.5 | 9.8 | 35.4 |
| Total, Markets served in July 1979 | 2,614 | 967 | 908 | 334 | 405 | 37.0 | 34.7 | 12.8 | 15.5 |
| Total, Markets served by 2 or more carriers in July 1979 | 809 | 76 | 256 | 334 | 143 | 9.4 | 31.6 | 41.3 | 17.7 |

Source: Official Airline Guide, July 1979 and July 1988.

COMPETITIVE STATUS OF SINGLE-PLANE MARKETS SERVED, 1979-1988

Table I-22

Objective: To trace the competitive status of nonstop markets served in July 1979 to July 1988. In matrix form, the table compares the number of nonstop carriers serving the markets in 1979 with the number of nonstop carriers serving in 1988.

Data Sources: OAG tapes.

Observations/Interpretation: This is a backup table to Table I-21, which summarizes the data here. The table shows, for example, that of 1,805 nonstop markets served by one carrier in July 1979, 891 were not served nonstop in July 1988, 652 were still served by one nonstop carrier, 211 were served by 2 nonstop carriers, 41 by 3 nonstop carriers, and 10 by 4 nonstop carriers. A total of 806 nonstop markets in July 1988 were not served nonstop in July 1979. The following shows the changes in the number of nonstop markets by number of carriers providing nonstop service:

| <u>Number of Carriers</u> | <u>Number of Nonstop Mkts.</u> | | <u>Change</u> |
|-------------------------------|--------------------------------|------------------|---------------|
| | <u>July 1979</u> | <u>July 1988</u> | |
| 1 | 1,805 | 1,615 | -190 |
| 2 | 580 | 557 | - 23 |
| 3 | 142 | 169 | + 27 |
| 4 | 48 | 73 | + 25 |
| 5 | 19 | 23 | + 4 |
| 6 | 9 | 8 | - 1 |
| 7 | 4 | 3 | - 1 |
| 8 or more | 7 | 5 | - 2 |
| Subtotal, Comp. Mkts. | 809 | 838 | + 29 |
| Total | 2,614 | 2,453 | -161 |

DISTRIBUTION OF NONSTOP MARKETS SERVED, BY NUMBER OF NONSTOP PARTICIPANTS
July 1979 and July 1988

| Number of Carriers Serving in 1979 | Number of Nonstop Carriers in 1988 | | | | | | | | Total |
|---|------------------------------------|-------|-----|-----|----|----|---|---|-------|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8+ |
| 0 | 0 | 724 | 74 | 4 | 3 | 1 | 0 | 0 | 0 |
| 1 | 891 | 652 | 211 | 41 | 10 | 0 | 0 | 0 | 0 |
| 2 | 69 | 197 | 212 | 72 | 25 | 3 | 2 | 0 | 0 |
| 3 | 6 | 33 | 46 | 29 | 19 | 7 | 2 | 0 | 0 |
| 4 | 1 | 9 | 6 | 16 | 10 | 4 | 1 | 1 | 0 |
| 5 | 0 | 0 | 4 | 2 | 5 | 5 | 2 | 1 | 0 |
| 6 | 0 | 0 | 2 | 4 | 0 | 2 | 0 | 0 | 1 |
| 7 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 |
| 8 or more | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 3 |
| Total | 967 | 1,615 | 557 | 169 | 73 | 23 | 8 | 3 | 5 |
| | | | | | | | | | 3,420 |

Note: Limited to 48 contiguous states.

Source: Official Airline Guide, July 1979 and July 1988.

COMPARISON OF NONSTOP MARKETS SERVED, 1984-1988

Table I-23

Objective: To trace all nonstop markets of July 1984 to show the competitive status of their service in July 1988.

Data Sources: OAG tapes.

Observations/Interpretation: Of the 3,081 nonstop markets served in July 1984 and/or July 1988, 628, or 20.4 percent, were not served in 1988, 1,076 (34.9 percent) were served by the same number of nonstop carriers in both periods; 507 (16.5 percent) were served by fewer nonstop carriers in 1988; and 870 (28.2 percent) were served by more nonstop carriers in 1988 than in 1984.

Considering only the 2,474 markets served in July 1984, the breakdown is: 628 (25.4 percent) not served in 1988; 1,076 (43.5 percent) served by the same number of nonstop carriers; 507 (20.5 percent) served by fewer nonstop carriers; and 263 (10.6 percent) served by more nonstop carries in 1988.

The table also summarizes the data for markets which had competitive nonstop service in 1984, i.e., were served by two or more nonstop carriers. There were 978 such markets and the 1988 breakdown for them is as follows: 66 (6.7 percent) not served in 1988; 319 (32.6 percent) served by the same number of nonstop carriers in both years; 507 (51.8 percent) served by fewer nonstop carriers; and 86 (8.8 percent) served by more nonstop carriers.

SERVICE CHANGES IN NONSTOP MARKETS SERVED IN JULY 1979
July 1984 - July 1988

| Number of Carrier Serving, July 1984 | Total Markets | Number of Markets, July 1988 | | | | Percent of Total Markets | | | |
|--|------------------|------------------------------|-------------------------|-------------------|------------------|--------------------------|-------------------------|-------------------|------------------|
| | | Not Served | Same No. of Carriers | Fewer Carriers | More Carriers | Not Served | Same No. of Carriers | Fewer Carriers | More Carriers |
| 0 | 607 | -- | -- | -- | 607 | -- | -- | -- | 100.0 |
| 1 | 1,496 | 562 | 757 | -- | 177 | 37.6 | 50.6 | -- | 11.8 |
| 2 | 594 | 58 | 238 | 238 | 60 | 9.8 | 40.1 | 40.1 | 10.1 |
| 3 | 215 | 8 | 56 | 132 | 19 | 3.7 | 26.0 | 61.4 | 8.8 |
| 4 | 78 | 0 | 13 | 59 | 6 | 0.0 | 16.7 | 75.6 | 7.7 |
| 5 | 40 | 0 | 8 | 31 | 1 | 0.0 | 20.0 | 77.5 | 2.5 |
| 6 | 21 | 0 | 3 | 18 | 0 | 0.0 | 14.3 | 85.7 | 0.0 |
| 7 | 11 | 0 | 0 | 11 | 0 | 0.0 | 0.0 | 100.0 | 0.0 |
| 8 or more | 19 | 0 | 1 | 18 | 0 | 0.0 | 5.3 | 94.7 | 0.0 |
| Total, Markets served in July 1984 and/or July 1988 | 3,081 | 628 | 1,076 | 507 | 870 | 20.4 | 34.9 | 16.5 | 28.2 |
| Total, Markets served in July 1984 | 2,474 | 628 | 1,076 | 507 | 263 | 25.4 | 43.5 | 20.5 | 10.6 |
| Total, Markets served by 2 or more carriers in July 1984 | 978 | 66 | 319 | 507 | 86 | 6.7 | 32.6 | 51.8 | 8.8 |

Source: Official Airline Guide, July 1984 and July 1988.

COMPETITIVE STATUS OF SINGLE-PLANE MARKETS SERVED, 1984-1988

Table I-24

Objective: To trace the competitive status of nonstop markets served in July 1984 to July 1988. In matrix form, the table compares the number of nonstop carriers serving the markets in 1984 with the number of nonstop carriers serving in 1988.

Data Source: OAG tapes.

Observations/Interpretation: This is a backup table to Table I-23, which summarizes the data here. The table shows, for example, that of 1,496 nonstop markets served by one carrier in July 1984, 562 were not served nonstop in July 1988, 757 were still served by one nonstop carrier, 155 were served by 2 nonstop carriers, 17 were served by 3 nonstop carriers, 4 were served by 4 nonstop carriers, and one was served by 5 nonstop carriers. A total of 607 nonstop markets in July 1988 were not served nonstop in July 1984. The following shows the changes in the number of nonstop markets by number of carriers providing nonstop service:

| <u>Number of</u> <u>Carriers</u> | <u>Number of Nonstop Mkts.</u> <u>July 1984</u> | <u>July 1988</u> | <u>Change</u> |
|-------------------------------------|--|------------------|---------------|
| 1 | 1,496 | 1,615 | +119 |
| 2 | 594 | 557 | - 37 |
| 3 | 215 | 169 | - 46 |
| 4 | 78 | 73 | - 5 |
| 5 | 40 | 23 | - 17 |
| 6 | 21 | 8 | - 13 |
| 7 | 11 | 3 | - 8 |
| 8 or more | 19 | 5 | - 14 |
| Subtotal, Comp. Mkts. | 978 | 838 | -140 |
| Total | 2,474 | 2,453 | - 21 |

DISTRIBUTION OF NONSTOP MARKETS SERVED, BY NUMBER OF NONSTOP PARTICIPANTS
July 1984 and July 1988

| Number of Carriers Serving in 1984 | Number of Nonstop Carriers in 1988 | | | | | | | | Total |
|---|------------------------------------|-------|-----|-----|----|----|---|---|-------|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8+ |
| 0 | 0 | 563 | 41 | 2 | 1 | 0 | 0 | 0 | 0 |
| 1 | 562 | 757 | 155 | 17 | 4 | 1 | 0 | 0 | 0 |
| 2 | 58 | 238 | 238 | 49 | 11 | 0 | 0 | 0 | 0 |
| 3 | 8 | 43 | 89 | 56 | 18 | 1 | 0 | 0 | 0 |
| 4 | 0 | 11 | 23 | 25 | 13 | 5 | 1 | 0 | 0 |
| 5 | 0 | 2 | 8 | 10 | 11 | 8 | 1 | 0 | 0 |
| 6 | 0 | 0 | 1 | 7 | 8 | 2 | 3 | 0 | 0 |
| 7 | 0 | 1 | 2 | 1 | 3 | 2 | 2 | 0 | 0 |
| 8 or more | 0 | 0 | 0 | 2 | 4 | 4 | 1 | 3 | 5 |
| Total | 628 | 1,615 | 557 | 169 | 73 | 23 | 8 | 3 | 5 |
| | | | | | | | | | 3,081 |

Note: Limited to 48 contiguous states.

Source: Official Airline Guide, July 1979 and July 1988.

COMPETITION IN SINGLE-PLANE MARKETS SERVED BY MAJOR CARRIERS

Table I-25

Objective: To analyze the markets served by each of the major carriers in July 1979, July 1984 and July 1988, and break down the markets served by the number of carriers serving the market. This will show the growth in the number of markets served by each carrier and the extent to which competitive service is provided in a carrier's markets, as well as the changes which have occurred since 1979.

Data Sources: OAG tapes. Data include code-sharing affiliates so this must be recognized in interpreting the results.

Observations/Interpretation: All major carriers showed an increase in the number of single-plane markets served between July 1979 and July 1988, while the industry had a small reduction in number of markets from 5,400 to 5,314. With the exception of 2 and 3 carrier markets of Trans World, all majors showed increases in all market groups between 1979 and 1988.

The data show a tremendous expansion of service by the majors, reflecting the internal growth in their own service, acquisitions, and the expansion of service by code-sharing commuters. While many more single-plane monopoly city-pairs were served by the major carriers in 1988 compared to 1984, service in many more competitive markets was also added.

For all carriers, 1988 single-plane service competition was comparable to 1984.

NUMBER OF MARKETS SERVED, BY NUMBER OF CARRIERS SERVING, MAJOR CARRIERS
July 1979, July 1984 and July 1988

| Carrier | Month | Number of Markets by Number of Carriers Serving | | | | | | | | Total Markets |
|--------------|----------|---|-----|-----|-----|----|----|----|----|------------------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8+ | |
| American | July '79 | 109 | 113 | 80 | 36 | 20 | 13 | 3 | 8 | 382 |
| | July '84 | 246 | 141 | 96 | 43 | 35 | 31 | 16 | 25 | 633 |
| | July '88 | 413 | 312 | 177 | 118 | 52 | 31 | 17 | 24 | 1,144 |
| Continental | July '79 | 50 | 52 | 39 | 15 | 9 | 7 | 2 | 3 | 177 |
| | July '84 | 18 | 63 | 36 | 34 | 24 | 12 | 10 | 11 | 208 |
| | July '88 | 191 | 147 | 99 | 57 | 43 | 27 | 13 | 22 | 599 |
| Delta | July '79 | 255 | 123 | 73 | 43 | 23 | 8 | 11 | 12 | 548 |
| | July '84 | 250 | 155 | 141 | 68 | 41 | 27 | 14 | 32 | 607 |
| | July '88 | 431 | 357 | 185 | 110 | 61 | 33 | 15 | 21 | 1,213 |
| Eastern | July '79 | 223 | 153 | 69 | 51 | 21 | 7 | 10 | 9 | 543 |
| | July '84 | 173 | 147 | 124 | 65 | 35 | 21 | 14 | 28 | 607 |
| | July '88 | 229 | 167 | 117 | 54 | 36 | 24 | 15 | 16 | 658 |
| Northwest | July '79 | 96 | 48 | 31 | 23 | 12 | 6 | 6 | 7 | 229 |
| | July '84 | 53 | 40 | 32 | 29 | 18 | 12 | 8 | 18 | 210 |
| | July '88 | 387 | 156 | 76 | 47 | 19 | 17 | 8 | 18 | 728 |
| Pan American | July '79 | 0 | 0 | 1 | 4 | 0 | 3 | 0 | 2 | 10 |
| | July '84 | 2 | 6 | 9 | 12 | 7 | 13 | 7 | 22 | 78 |
| | July '88 | 0 | 5 | 10 | 8 | 10 | 6 | 7 | 14 | 60 |
| Piedmont | July '79 | 255 | 67 | 19 | 13 | 7 | 4 | 2 | 1 | 368 |
| | July '84 | 244 | 135 | 57 | 21 | 18 | 7 | 3 | 15 | 500 |
| | July '88 | 524 | 182 | 98 | 40 | 16 | 17 | 8 | 13 | 898 |

NUMBER OF MARKETS SERVED, BY NUMBER OF CARRIERS SERVING, MAJOR CARRIERS
July 1979, July 1984 and July 1988

| Carrier | Month | Number of Markets by Number of Carriers Serving | | | | | | | | Total Markets |
|--------------|----------|---|-------|-----|-----|----|----|----|----|------------------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8+ | |
| Trans World | July '79 | 60 | 97 | 79 | 25 | 17 | 9 | 7 | 8 | 302 |
| | July '84 | 59 | 53 | 56 | 29 | 23 | 18 | 15 | 29 | 282 |
| | July '88 | 147 | 85 | 56 | 39 | 34 | 21 | 16 | 23 | 421 |
| United | July '79 | 259 | 189 | 93 | 29 | 20 | 13 | 3 | 9 | 615 |
| | July '84 | 235 | 147 | 110 | 67 | 38 | 23 | 18 | 26 | 664 |
| | July '88 | 292 | 230 | 127 | 106 | 44 | 29 | 17 | 18 | 863 |
| USAir | July '79 | 254 | 107 | 52 | 25 | 19 | 7 | 5 | 5 | 474 |
| | July '84 | 224 | 113 | 86 | 37 | 19 | 12 | 8 | 16 | 515 |
| | July '88 | 310 | 156 | 136 | 71 | 39 | 21 | 13 | 14 | 760 |
| All Carriers | July '79 | 3,942 | 920 | 322 | 116 | 52 | 22 | 13 | 13 | 5,400 |
| | July '84 | 3,539 | 1,024 | 443 | 189 | 94 | 53 | 29 | 41 | 5,412 |
| | July '88 | 3,481 | 1,054 | 413 | 192 | 83 | 45 | 22 | 24 | 5,314 |

Note: Includes service provided by code-sharing commuters. Data limited to 48 contiguous states.

Source: Official Airline Guide, July 1979, July 1984 and July 1988.

PERCENT OF MARKETS SERVED, BY NUMBER OF CARRIERS SERVING, MAJOR CARRIERS
July 1979, July 1984 and July 1988

| Carrier | Month | Percent of Markets by Number of Carriers Serving | | | | | | | | Total Markets |
|--------------|----------|--|------|------|------|------|------|------|------|---------------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8+ | |
| American | July '79 | 28.5 | 29.6 | 20.9 | 9.4 | 5.2 | 3.4 | 0.8 | 2.1 | 100.0 |
| | July '84 | 38.9 | 22.3 | 15.2 | 6.8 | 5.5 | 4.9 | 2.5 | 3.9 | 100.0 |
| | July '88 | 36.1 | 27.3 | 15.5 | 10.3 | 4.5 | 2.7 | 1.5 | 2.1 | 100.0 |
| Continental | July '79 | 28.2 | 29.4 | 22.0 | 8.5 | 5.1 | 4.0 | 1.1 | 1.7 | 100.0 |
| | July '84 | 8.7 | 30.3 | 17.3 | 16.3 | 11.5 | 5.8 | 4.8 | 5.3 | 100.0 |
| | July '88 | 31.9 | 24.5 | 16.5 | 9.5 | 7.2 | 4.5 | 2.2 | 3.7 | 100.0 |
| Delta | July '79 | 46.5 | 22.4 | 13.3 | 7.8 | 4.2 | 1.5 | 2.0 | 2.2 | 100.0 |
| | July '84 | 41.2 | 25.5 | 23.2 | 11.2 | 6.8 | 4.4 | 2.3 | 5.3 | 100.0 |
| | July '88 | 35.5 | 29.4 | 15.3 | 9.1 | 5.0 | 2.7 | 1.2 | 1.7 | 100.0 |
| Eastern | July '79 | 41.1 | 28.2 | 12.7 | 9.4 | 3.9 | 1.3 | 1.8 | 1.7 | 100.0 |
| | July '84 | 28.5 | 24.2 | 20.4 | 10.7 | 5.8 | 3.5 | 2.3 | 4.6 | 100.0 |
| | July '88 | 34.8 | 25.4 | 17.8 | 8.2 | 5.5 | 3.6 | 2.3 | 2.4 | 100.0 |
| Northwest | July '79 | 41.9 | 21.0 | 13.5 | 10.0 | 5.2 | 2.6 | 2.6 | 3.1 | 100.0 |
| | July '84 | 25.2 | 19.0 | 15.2 | 13.8 | 8.6 | 5.7 | 3.8 | 8.6 | 100.0 |
| | July '88 | 53.2 | 21.4 | 10.4 | 6.5 | 2.6 | 2.3 | 1.1 | 2.5 | 100.0 |
| Pan American | July '79 | 0.0 | 0.0 | 10.0 | 40.0 | 0.0 | 30.0 | 0.0 | 20.0 | 100.0 |
| | July '84 | 2.6 | 7.7 | 11.5 | 15.4 | 9.0 | 16.7 | 9.0 | 28.2 | 100.0 |
| | July '88 | 0.0 | 8.3 | 16.7 | 13.3 | 16.7 | 10.0 | 11.7 | 23.3 | 100.0 |
| Piedmont | July '79 | 69.3 | 18.2 | 5.2 | 3.5 | 1.9 | 1.1 | 0.5 | 0.3 | 100.0 |
| | July '84 | 48.8 | 27.0 | 11.4 | 4.2 | 3.6 | 1.4 | 0.6 | 3.0 | 100.0 |
| | July '88 | 58.4 | 20.3 | 10.9 | 4.5 | 1.8 | 1.9 | 0.9 | 1.4 | 100.0 |

PERCENT OF MARKETS SERVED, BY NUMBER OF CARRIERS SERVING, MAJOR CARRIERS
July 1979, July 1984 and July 1988

| Carrier | Month | Percent of Markets by Number of Carriers Serving | | | | | | | | Total Markets |
|--------------|----------|--|------|------|------|-----|-----|-----|------|------------------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8+ | |
| Trans World | July '79 | 19.9 | 32.1 | 26.2 | 8.3 | 5.6 | 3.0 | 2.3 | 2.6 | 100.0 |
| | July '84 | 20.9 | 18.8 | 19.9 | 10.3 | 8.2 | 6.4 | 5.3 | 10.3 | 100.0 |
| | July '88 | 34.9 | 20.2 | 13.3 | 9.3 | 8.1 | 5.0 | 3.8 | 5.5 | 100.0 |
| United | July '79 | 42.1 | 30.7 | 15.1 | 4.7 | 3.3 | 2.1 | 0.5 | 1.5 | 100.0 |
| | July '84 | 35.4 | 22.1 | 16.6 | 10.1 | 5.7 | 3.5 | 2.7 | 3.9 | 100.0 |
| | July '88 | 33.8 | 26.7 | 14.7 | 12.3 | 5.1 | 3.4 | 2.0 | 2.1 | 100.0 |
| USAir | July '79 | 53.6 | 22.6 | 11.0 | 5.3 | 4.0 | 1.5 | 1.1 | 1.1 | 100.0 |
| | July '84 | 43.5 | 21.9 | 16.7 | 7.2 | 3.7 | 2.3 | 1.6 | 3.1 | 100.0 |
| | July '88 | 40.8 | 20.5 | 17.9 | 9.3 | 5.1 | 2.8 | 1.7 | 1.8 | 100.0 |
| All Carriers | July '79 | 73.0 | 17.0 | 6.0 | 2.1 | 1.0 | 0.4 | 0.2 | 0.2 | 100.0 |
| | July '84 | 65.4 | 18.9 | 8.2 | 3.5 | 1.7 | 1.0 | 0.5 | 0.8 | 100.0 |
| | July '88 | 65.5 | 19.8 | 7.8 | 3.6 | 1.6 | 0.8 | 0.4 | 0.5 | 100.0 |

Note: Includes service provided by code-sharing commuters. Data limited to 48 contiguous states.
Percentages may not add to 100.0 due to rounding.

Source: Official Airline Guide, July 1979, July 1984 and July 1988.

SUMMARY OF SINGLE PLANE MARKETS SERVED BY MAJORS

Table I-26

Objective: To present summary figures for the major carriers showing the total number of single-plane markets served by each carrier in July 1979, July 1984 and July 1988.

Data Sources: OAG tapes. Data include code-sharing affiliates so this must be recognized in interpreting the results.

Observations/Interpretation: All major carriers showed an increase in the number of single-plane markets served. While Pan American had the largest percentage increase -- a 500 percent increase, with markets increasing from 10 to 60 -- numerical increases for some of the other carriers were much larger. American had an increase of 762 markets, Delta, 665 markets, Piedmont, 530 markets, and Northwest 499 markets. The fact that the majors showed increases across the board while the industry had a slight decline reflects the fact that much of the commuter service which appeared under the commuter carrier codes in 1979 was included under the major carrier codes in 1988.

CHANGE IN NUMBER OF MARKETS SERVED, MAJOR CARRIERS
July 1988 vs. July 1979 and July 1984

| <u>Carrier</u> | <u>Total Markets Served</u> | | | <u>Percent Change</u> | |
|----------------|-----------------------------|----------------------|----------------------|-----------------------|------------------|
| | <u>July 1979</u> | <u>July 1984</u> | <u>July 1988</u> | <u>1988/1979</u> | <u>1988/1984</u> |
| American | 382 | 633 | 1,144 | 199.5% | 80.7% |
| Continental | 177 | 208 | 599 | 238.4 | 188.0 |
| Delta | 548 | 728 | 1,213 | 121.4 | 66.6 |
| Eastern | 543 | 607 | 658 | 21.2 | 8.4 |
| Northwest | 229 | 210 | 728 | 217.9 | 246.7 |
| Pan American | 10 | 78 | 60 | 500.0 | - 23.1 |
| Piedmont | 368 | 500 | 898 | 144.0 | 79.6 |
| Trans World | 302 | 282 | 421 | 39.4 | 49.3 |
| United | 615 | 664 | 863 | 40.3 | 30.0 |
| USAir | 474 | 515 | 760 | 60.3 | 47.6 |
| All Carriers | 5,400 | 5,412 | 5,314 | - 1.6 | - 1.8 |

Note: Includes service provided by code-sharing commuters.
Data limited to 48 contiguous states.

Source: Official Airline Guide, July 1979, July 1984 and
July 1988.

COMPETITION FROM TOP 3 COMPETITORS IN MAJOR
CARRIERS' TOP 100 O&D MARKETS

Tables I-27 and I-28

Objective: To show the percentage share of revenue passenger miles of each major carrier in its top 100 RPM markets and the percentage shares of its 3 top competitors for the years 1979, 1984 and YE September 30, 1988.

Data Sources: Origin-Destination Survey of Airline Passenger Traffic, Table 10.

Observations/Interpretation: Table I-27 shows that all major carrier face substantial competition in their top markets. In all cases, the 1979-1984 comparisons of major carrier shares show a decline and all but one (Pan American) of the 1979-1988 comparisons also show a decline. The 1984-1988 changes show increases for 6 carriers and decreases for 4 carriers. The changes for the 3 top competitors of each major were fairly evenly balanced: for 1979-1984, 5 up, 5 down; for 1984-1988, 4 up and 6 down; and for 1979-1988, 5 up, 5 down.

In 1979, five major carriers' percentage shares exceeded those of the 3 top competitors: American, Delta, Eastern, United and USAir. By 1984, only one carrier's share exceeded that of the top 3 competitors: United's. That same pattern held true for the YE September 30, 1988.

Table I-28 is a backup table and shows the individual percentage RPM shares of the top 3 competitors of each major carrier.

RPM SHARES OF MAJORS AND THREE TOP COMPETITORS
IN TOP 100 RPM MARKETS OF EACH MAJOR CARRIER
1979, 1984 & YE SEPT. 30, 1988

| <u>Carrier</u> | Percentage Share of RPM in Top 100 Markets of Each Major | | |
|-------------------|---|-------------|-------------|
| | <u>1979</u> | <u>1984</u> | <u>1988</u> |
| American | 48.3 | 31.0 | 23.3 |
| 3 top competitors | 41.9 | 39.6 | 48.4 |
| Continental | 33.9 | 11.9 | 22.6 |
| 3 top competitors | 42.5 | 53.4 | 46.1 |
| Delta | 48.2 | 28.7 | 27.5 |
| 3 top competitors | 40.4 | 40.5 | 39.9 |
| Eastern | 49.4 | 25.0 | 22.9 |
| 3 top competitors | 32.0 | 36.3 | 40.8 |
| Northwest | 23.8 | 14.2 | 19.7 |
| 3 top competitors | 47.5 | 53.8 | 50.9 |
| Pan American | 7.6 | 6.9 | 7.9 |
| 3 top competitors | 74.1 | 50.2 | 48.7 |
| Piedmont | 30.1 | 16.4 | 16.8 |
| 3 top competitors | 56.3 | 51.3 | 39.4 |
| Trans World | 38.1 | 16.3 | 16.8 |
| 3 top competitors | 54.0 | 50.4 | 51.4 |
| United | 43.8 | 40.6 | 37.0 |
| 3 top competitors | 41.9 | 31.6 | 35.7 |
| USAir | 47.3 | 13.5 | 17.0 |
| 3 top competitors | 33.0 | 56.5 | 47.3 |

Source: Origin-Destination Survey of Airline Passenger Traffic,
Table 10.

RPM SHARES OF MAJORS AND THREE LEADING COMPETITORS
IN TOP 100 MARKETS OF EACH MAJOR CARRIER
1979, 1984 & YE SEPT. 30, 1988

| 1979 | | 1984 | | 1988* | |
|--------------|----------|--------------|----------|--------------|----------|
| Carrier | % of RPM | Carrier | % of RPM | Carrier | % of RPM |
| American | 48.3 | American | 31.0 | American | 23.3 |
| United | 19.5 | United | 27.2 | United | 26.3 |
| Trans World | 19.2 | Trans World | 8.3 | Continental | 12.9 |
| Braniff | 3.2 | Delta | 4.1 | Trans World | 9.2 |
| Continental | 33.9 | Continental | 11.9 | Continental | 22.6 |
| United | 29.6 | United | 27.3 | United | 23.8 |
| American | 6.5 | American | 17.4 | American | 12.9 |
| Trans World | 6.4 | Trans World | 8.7 | Trans World | 9.4 |
| Delta | 48.2 | Delta | 28.7 | Delta | 27.5 |
| Eastern | 30.1 | Eastern | 15.5 | United | 15.4 |
| National | 6.1 | American | 16.1 | American | 13.7 |
| American | 4.2 | United | 8.9 | Continental | 10.8 |
| Eastern | 49.4 | Eastern | 25.0 | Eastern | 22.9 |
| Delta | 28.2 | Delta | 15.4 | Delta | 16.9 |
| United | 2.1 | United | 10.7 | United | 13.4 |
| Northwest | 1.7 | American | 10.2 | Continental | 10.5 |
| Northwest | 23.8 | Northwest | 14.2 | Northwest | 19.7 |
| United | 31.2 | United | 29.7 | United | 26.1 |
| Western | 9.2 | American | 16.8 | American | 13.6 |
| Delta | 7.1 | Trans World | 7.3 | Continental | 11.2 |
| Pan American | 7.6 | Pan American | 6.9 | Pan American | 7.9 |
| United | 47.4 | United | 20.4 | United | 20.1 |
| Northwest | 14.0 | American | 16.6 | American | 14.3 |
| Continental | 12.7 | Eastern | 13.2 | Continental | 14.3 |

RPM SHARES OF MAJORS AND THREE LEADING COMPETITORS
IN TOP 100 MARKETS OF EACH MAJOR CARRIER
1979, 1984 & YE SEPT. 30, 1988

| 1979 | | 1984 | | 1988* | |
|-------------|----------|----------------|----------|-------------|----------|
| Carrier | % of RPM | Carrier | % of RPM | Carrier | % of RPM |
| Piedmont | 30.1 | Piedmont | 16.4 | Piedmont | 16.8 |
| Eastern | 22.4 | Eastern | 27.4 | Eastern | 16.9 |
| Delta | 22.0 | Delta | 15.0 | Delta | 12.1 |
| United | 11.9 | People Express | 8.9 | Continental | 10.4 |
| Trans World | 38.1 | Trans World | 16.3 | Trans World | 16.8 |
| American | 27.9 | United | 22.0 | United | 22.1 |
| United | 22.9 | American | 19.7 | American | 14.7 |
| Continental | 3.2 | Eastern | 8.7 | Continental | 14.6 |
| United | 43.8 | United | 40.6 | United | 37.0 |
| American | 19.6 | American | 18.7 | American | 14.4 |
| Trans World | 16.2 | Trans World | 7.8 | Continental | 13.1 |
| Continental | 6.1 | Continental | 5.1 | Trans World | 8.2 |
| USAir | 47.3 | USAir | 13.5 | USAir | 17.0 |
| American | 13.4 | American | 21.6 | United | 22.6 |
| Trans World | 12.0 | United | 20.1 | American | 14.0 |
| Northwest | 7.6 | Trans World | 14.8 | Trans World | 10.7 |

* Year ended September 30, 1988.

Source: Origin - Destination Survey of Airline Passenger Traffic,
Table 10.

MARKET SHARE BY COMPETITOR OF EACH MAJOR CARRIER'S TOP 100 MARKETS

Table I-29

Objective: To present the total RPM's and percentage shares in each major carrier's top 100 markets for 1979, 1984 and YE September 30, 1988 and compare this with RPM's of all competitors in these markets to see what changes have occurred since 1979.

Data Sources: Origin-Destination Survey of Airline Passenger Traffic, Table 10.

Observations/Interpretation: As shown in Table I-27, generally carrier RPM shares declined from 1979 to 1988. The top 100 markets were of less relative importance to a carrier because of the general expansion in the number of markets served, as shown in Table I-26.

Because of the growth in overall traffic, most carriers' 100 market RPM in 1988 were greater than 1979, but for three carriers, American, Eastern and Trans World, they were lower. Carriers entered many markets in this period which they had been precluded from serving prior to 1978. Many of these were larger markets in which it was not possible to gain large market shares, particularly in the short run. With all of the new entry which occurred, competition was more intense in most markets and it was more difficult to maintain market share.

ANALYSIS OF COMPETITION IN AMERICAN'S TOP 100 RRM MARKETS
1979, 1984 & YE SEPT. 30, 1988

| | 1979 | | | 1984 | | | YE SEPT. 30, 1988 | | |
|--------------------|----------------|------------|----------------|----------------|------------|----------------|-------------------|------------|----------------|
| | No. of Markets | RRM (000) | Percent of RRM | No. of Markets | RRM (000) | Percent of RRM | No. of Markets | RRM (000) | Percent of RRM |
| American | 100 | 19,118,217 | 49.3 | 100 | 17,462,729 | 31.0 | 100 | 15,715,704 | 23.3 |
| <u>Competitors</u> | | | | | | | | | |
| USair | 30 | 245,972 | 0.6 | 59 | 647,271 | 1.1 | 82 | 1,130,115 | 1.7 |
| Braniff | 70 | 1,278,445 | 3.2 | 47 | 856,646 | 1.5 | 60 | 1,711,581 | 2.5 |
| Continental | 36 | 696,282 | 1.8 | 79 | 2,125,942 | 3.8 | 94 | 8,732,323 | 12.9 |
| Delta | 74 | 1,258,851 | 3.2 | 87 | 2,314,444 | 4.1 | 99 | 4,858,657 | 7.2 |
| Eastern | 73 | 365,527 | 0.9 | 79 | 1,122,826 | 2.0 | 68 | 1,149,416 | 1.7 |
| Frontier | 15 | 7,793 | 0.0 | 54 | 257,379 | 0.5 | — | — | — |
| National | 8 | 233,998 | 0.6 | — | — | — | — | — | — |
| Northwest | 32 | 300,166 | 0.8 | 74 | 1,820,624 | 3.2 | — | — | — |
| Ozark | 12 | 87,894 | 0.2 | 36 | 213,392 | 0.4 | 91 | 2,943,513 | 4.4 |
| Piedmont | 12 | 10,819 | 0.0 | 39 | 181,877 | 0.3 | — | — | — |
| Republic | 14 | 55,026 | 0.1 | 75 | 709,971 | 1.3 | 45 | 251,632 | 0.4 |
| Texas Int'l | 9 | 206,741 | 0.5 | — | — | — | — | — | — |
| Trans World | 67 | 7,614,382 | 19.2 | 76 | 4,696,478 | 8.3 | — | — | — |
| United | 45 | 7,724,753 | 19.5 | 99 | 15,357,479 | 27.2 | 90 | 6,222,148 | 9.2 |
| Pan American | — | — | — | 61 | 1,860,787 | 3.3 | 99 | 17,750,251 | 26.3 |
| People Express | — | — | — | 6 | 926,010 | 1.6 | 49 | 2,355,206 | 3.5 |
| Western | 12 | 14,145 | 0.0 | 55 | 1,519,974 | 2.7 | — | — | — |
| Southwest | 1 | 13,687 | 0.0 | 6 | 590,313 | 1.0 | — | — | — |
| World | — | — | — | 5 | 976,563 | 1.7 | 16 | 819,510 | 1.2 |
| America West | — | — | — | — | — | — | — | — | — |
| All Other | — | 389,518 | 1.0 | — | 2,732,318 | 4.8 | 35 | 1,019,980 | 1.5 |
| Total | 100 | 39,622,206 | 100.0 | 100 | 56,373,023 | 100.0 | — | 2,784,789 | 4.1 |
| | | | | | | | 100 | 67,444,780 | 100.0 |

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN CONTINENTAL'S TOP 100 RRM MARKETS
1979, 1984 & YE SEPT. 30, 1988

| | 1979 | | | 1984 | | | YE SEPT. 30, 1988 | | |
|----------------|----------------|------------|----------------|----------------|------------|----------------|-------------------|------------|----------------|
| | No. of Markets | RRM (000) | Percent of RRM | No. of Markets | RRM (000) | Percent of RRM | No. of Markets | RRM (000) | Percent of RRM |
| Continental | 100 | 7,058,145 | 33.9 | 100 | 6,119,860 | 11.9 | 100 | 17,247,157 | 22.6 |
| Competitors | | | | | | | | | |
| American | 32 | 1,360,742 | 6.5 | 99 | 8,937,151 | 17.4 | 100 | 9,857,635 | 12.9 |
| Branniff | 68 | 1,045,060 | 5.0 | 50 | 316,153 | 0.6 | 71 | 938,858 | 1.2 |
| Delta | 33 | 161,146 | 0.8 | 87 | 1,931,637 | 3.7 | 99 | 5,891,803 | 7.7 |
| Eastern | 35 | 145,944 | 0.7 | 88 | 3,143,056 | 6.1 | 86 | 5,476,842 | 7.2 |
| Frontier | 15 | 206,470 | 1.0 | 63 | 859,719 | 1.7 | — | — | — |
| National | 7 | 525,177 | 2.5 | — | — | — | — | — | — |
| Northwest | 8 | 910,357 | 4.4 | 64 | 2,169,565 | 4.2 | 93 | 2,737,271 | 3.7 |
| Pan American | 2 | 289,910 | 1.4 | 43 | 1,972,600 | 3.8 | 52 | 3,910,190 | 5.1 |
| Air West | 24 | 160,474 | 0.8 | — | — | — | — | — | — |
| Texas Int'l | 23 | 371,241 | 1.8 | — | — | — | — | — | — |
| Trans World | 37 | 1,337,991 | 6.4 | 84 | 4,505,391 | 8.7 | 99 | 7,129,626 | 9.4 |
| United | 37 | 6,165,877 | 29.6 | 96 | 14,044,621 | 27.3 | 99 | 18,097,602 | 23.8 |
| Western | 36 | 819,396 | 3.9 | 56 | 1,510,924 | 2.9 | — | — | — |
| Southwest | 6 | 59,925 | 0.3 | 17 | 681,173 | 1.3 | 16 | 940,871 | 1.2 |
| USAir | — | — | — | 99 | 484,368 | 0.9 | 79 | 1,065,473 | 1.4 |
| People Express | — | — | — | 4 | 1,527,634 | 3.0 | — | — | — |
| Republic | 11 | 7,200 | 0.0 | 89 | 1,108,959 | 2.2 | — | — | — |
| World | — | — | — | 5 | 878,416 | 1.7 | — | — | — |
| America West | — | — | — | 1 | 14,825 | 0.0 | 26 | 820,112 | 1.1 |
| Piedmont | 3 | 12,971 | 0.1 | 43 | 78,147 | 0.2 | 66 | 486,865 | 0.6 |
| All Other | — | 177,501 | 0.9 | — | 1,185,524 | 2.3 | — | 1,516,488 | 2.0 |
| Total | 100 | 20,815,527 | 100.0 | 100 | 51,519,723 | 100.0 | 100 | 76,166,803 | 100.0 |

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN DELTA'S TOP 100 RM MARKETS
1979, 1984 & YE SEPT. 30, 1988

| | 1979 | | | 1984 | | | YE SEPT. 30, 1988 | | |
|-------------------|-------------------|-------------|------------------|-------------------|-------------|------------------|-------------------|-------------|------------------|
| | No. of Markets | RM (000) | Percent of RM | No. of Markets | RM (000) | Percent of RM | No. of Markets | RM (000) | Percent of RM |
| Delta | 100 | 12,804,565 | 43.2 | 100 | 11,284,712 | 28.7 | 100 | 15,615,518 | 27.5 |
| Competitors | | | | | | | | | |
| American | 45 | 1,106,161 | 4.2 | 95 | 6,326,665 | 16.1 | 100 | 7,754,503 | 13.7 |
| USAir | 35 | 86,191 | 0.3 | 60 | 339,546 | 0.9 | 79 | 651,029 | 1.1 |
| Braniff | 78 | 728,981 | 2.7 | 25 | 547,747 | 1.4 | 50 | 996,065 | 1.8 |
| Continental | 16 | 31,538 | 0.1 | 47 | 801,753 | 2.0 | 99 | 6,095,965 | 10.8 |
| Eastern | 85 | 8,003,159 | 30.1 | 92 | 6,085,203 | 15.5 | 83 | 5,603,340 | 9.9 |
| National | 23 | 1,618,699 | 6.1 | — | — | — | — | — | — |
| Northwest | 43 | 471,940 | 1.8 | 73 | 613,651 | 1.6 | 97 | 1,595,091 | 2.8 |
| Ozark | 29 | 83,382 | 0.3 | 50 | 120,053 | 0.3 | — | — | — |
| Piedmont | 27 | 52,655 | 0.2 | 71 | 440,567 | 1.1 | 70 | 559,943 | 1.0 |
| Pacific Southwest | 1 | 81,269 | 0.3 | — | — | — | 3 | 130,416 | 0.2 |
| Republic | 54 | 227,497 | 0.9 | 94 | 500,395 | 1.3 | — | — | — |
| Texas Int'l | 9 | 161,751 | 0.6 | — | — | — | — | — | — |
| Trans World | 61 | 132,291 | 0.5 | 86 | 2,104,088 | 5.4 | 95 | 4,475,040 | 7.9 |
| United | 65 | 435,527 | 1.6 | 99 | 3,502,807 | 8.9 | 100 | 8,718,107 | 15.4 |
| Western | 10 | 134,841 | 0.5 | 15 | 69,750 | 0.2 | — | — | — |
| Pan American | — | — | — | 70 | 1,527,215 | 3.9 | 59 | 2,086,097 | 3.7 |
| People Express | — | — | — | 8 | 2,643,131 | 6.7 | — | — | — |
| Southwest | 1 | 17,719 | 0.1 | 5 | 143,729 | 0.4 | 4 | 184,169 | 0.3 |
| World | — | — | — | 2 | 513,978 | 1.3 | — | — | — |
| America West | — | — | — | — | — | — | 9 | 191,413 | 0.3 |
| All Other | — | 375,881 | 1.4 | — | 1,724,430 | 4.4 | — | 2,028,141 | 3.6 |
| Total | 100 | 26,553,957 | 100.0 | 100 | 39,289,410 | 100.0 | 100 | 56,684,837 | 100.0 |

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN EASTERN'S TOP 100 RM MARKETS
1979, 1984 & YE SEPT. 30, 1988

| | 1979 | | | 1984 | | | YE SEPT. 30, 1988 | | |
|----------------|-------------------|-------------|------------------|-------------------|-------------|------------------|-------------------|-------------|------------------|
| | No. of Markets | RM (000) | Percent of RM | No. of Markets | RM (000) | Percent of RM | No. of Markets | RM (000) | Percent of RM |
| Eastern | 100 | 13,286,299 | 49.4 | 100 | 11,977,652 | 25.0 | 100 | 12,002,623 | 22.9 |
| Competitors | | | | | | | | | |
| American | 38 | 388,698 | 1.4 | 83 | 4,882,846 | 10.2 | 100 | 5,128,559 | 9.7 |
| USAir | 33 | 101,842 | 0.4 | 50 | 608,525 | 1.3 | 90 | 1,430,520 | 2.7 |
| Braniff | 72 | 391,439 | 1.5 | 36 | 247,776 | 0.5 | 62 | 1,229,136 | 2.3 |
| Continental | 11 | 105,440 | 0.4 | 49 | 1,745,319 | 3.6 | 99 | 5,561,145 | 10.5 |
| Delta | 80 | 7,572,024 | 28.2 | 97 | 7,350,999 | 15.4 | 95 | 8,954,373 | 16.9 |
| National | 35 | 2,965,248 | 11.0 | — | — | — | — | — | — |
| Northwest | 61 | 444,563 | 1.7 | 72 | 594,730 | 1.2 | 94 | 1,126,003 | 2.1 |
| Piedmont | 29 | 64,864 | 0.2 | 72 | 759,330 | 1.6 | 81 | 851,904 | 1.6 |
| Republic | 42 | 71,279 | 0.3 | 89 | 463,606 | 1.0 | — | — | — |
| Trans World | 64 | 238,707 | 0.9 | 79 | 3,670,062 | 7.7 | 88 | 4,832,666 | 9.1 |
| United | 75 | 568,241 | 2.1 | 96 | 5,124,114 | 10.7 | 99 | 7,069,531 | 13.4 |
| Western | 7 | 227,587 | 0.8 | 19 | 141,249 | 0.3 | — | — | — |
| Pan American | — | — | — | 72 | 2,618,882 | 5.5 | 57 | 3,569,932 | 6.8 |
| People Express | — | — | — | 20 | 4,404,244 | 9.2 | — | — | — |
| Southwest | — | — | — | 6 | 216,441 | 0.5 | 5 | 85,552 | 0.2 |
| World | — | — | — | 5 | 523,729 | 1.1 | — | — | — |
| America West | — | — | — | 4 | 51,931 | 0.1 | 9 | 466,302 | 0.9 |
| ALL Other | — | 460,091 | 1.7 | — | 2,503,130 | 5.2 | — | 475,075 | 0.9 |
| Total | 100 | 26,886,327 | 100.0 | 100 | 47,884,565 | 100.0 | 100 | 52,863,326 | 100.0 |

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN NORTHWEST'S TOP 100 R/M MARKETS
1979, 1984 & YE SEPT. 30, 1988

| | 1979 | | | 1984 | | | YE SEPT. 30, 1988 | | |
|----------------|-------------------|--------------|-------------------|-------------------|--------------|-------------------|-------------------|--------------|-------------------|
| | No. of Markets | R/M (000) | Percent of R/M | No. of Markets | R/M (000) | Percent of R/M | No. of Markets | R/M (000) | Percent of R/M |
| Northwest | 100 | 6,022,000 | 23.8 | 100 | 6,431,970 | 14.2 | 100 | 10,315,335 | 19.7 |
| Competitors | | | | | | | | | |
| American | 33 | 1,424,026 | 5.6 | 82 | 7,660,801 | 16.8 | 100 | 7,140,931 | 13.6 |
| USAir | 30 | 125,303 | 0.5 | 48 | 431,637 | 1.1 | 84 | 534,813 | 1.1 |
| Alaska | 3 | 362,397 | 1.4 | 8 | 247,061 | 0.5 | 3 | 214 | 0.0 |
| Branniff | 74 | 505,524 | 2.0 | 18 | 148,143 | 0.3 | 61 | 749,917 | 1.4 |
| Continental | 20 | 1,180,567 | 4.7 | 67 | 1,379,674 | 3.0 | 91 | 5,874,930 | 11.2 |
| Delta | 19 | 1,790,853 | 7.1 | 47 | 1,579,032 | 3.5 | 99 | 3,001,739 | 5.7 |
| Eastern | 63 | 1,629,771 | 6.4 | 73 | 1,465,309 | 3.2 | 78 | 1,253,891 | 2.4 |
| National | 10 | 97,968 | 0.4 | — | — | — | — | — | — |
| Ozark | 28 | 50,211 | 0.2 | 37 | 181,630 | 0.4 | — | — | — |
| Pan American | 4 | 538,167 | 2.1 | 47 | 1,596,126 | 3.5 | 44 | 2,005,341 | 3.8 |
| Republic | 40 | 385,833 | 1.5 | 79 | 1,653,966 | 3.6 | — | — | — |
| Trans World | 48 | 667,121 | 2.6 | 42 | 3,344,004 | 7.3 | 95 | 4,949,589 | 9.4 |
| United | 77 | 7,894,211 | 31.2 | 98 | 13,560,498 | 29.7 | 100 | 13,697,066 | 26.1 |
| Western | 28 | 2,333,077 | 9.2 | 50 | 2,073,237 | 4.5 | — | — | — |
| People Express | — | — | — | 8 | 824,362 | 1.8 | — | — | — |
| Piedmont | 6 | 4,107 | 0.0 | 27 | 192,917 | 0.4 | 60 | 214,252 | 0.4 |
| World | — | — | — | 5 | 976,563 | 2.1 | — | — | — |
| America West | — | — | — | — | — | — | 17 | 346,859 | 0.7 |
| Southwest | — | — | — | — | — | — | 11 | 347,812 | 0.7 |
| All Other | — | 266,071 | 1.1 | — | 1,743,046 | 3.8 | — | 1,950,483 | 3.7 |
| Total | 100 | 25,277,212 | 100.0 | 100 | 45,595,081 | 100.0 | 100 | 52,433,222 | 100.0 |

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN PAN AMERICAN'S TOP 100 RRM MARKETS
1979, 1984 & YE SEPT. 30, 1988

| | 1979 | | | 1984 | | | YE SEPT. 30, 1988 | | |
|-------------------|----------------|-----------|----------------|----------------|------------|----------------|-------------------|------------|----------------|
| | No. of Markets | RRM (000) | Percent of RRM | No. of Markets | RRM (000) | Percent of RRM | No. of Markets | RRM (000) | Percent of RRM |
| Pan American 1/ | 6 | 533,458 | 7.6 | 100 | 4,002,407 | 6.9 | 100 | 5,032,901 | 7.9 |
| Competitors | | | | | | | | | |
| Branniff | 6 | 359,276 | 5.1 | 39 | 411,313 | 0.7 | 44 | 869,645 | 1.4 |
| Continental | 6 | 902,651 | 12.7 | 70 | 2,131,595 | 3.6 | 97 | 9,155,034 | 14.3 |
| Northwest | 6 | 996,392 | 14.0 | 74 | 2,009,772 | 3.4 | 94 | 2,363,296 | 3.7 |
| United | 6 | 3,370,073 | 47.4 | 96 | 11,929,867 | 20.4 | 99 | 12,812,295 | 20.1 |
| Western | 5 | 816,267 | 11.5 | 32 | 1,470,975 | 2.5 | — | — | — |
| American | — | — | — | 90 | 9,714,555 | 16.6 | 100 | 9,155,519 | 14.3 |
| USAir | — | — | — | 63 | 842,698 | 1.4 | 81 | 2,179,353 | 3.4 |
| Delta | — | — | — | 96 | 3,908,273 | 6.7 | 92 | 6,258,469 | 9.8 |
| Eastern | — | — | — | 82 | 7,706,365 | 13.2 | 85 | 6,577,160 | 10.3 |
| People Express | — | — | — | 18 | 3,890,831 | 6.7 | — | — | — |
| Piedmont | — | — | — | 60 | 547,652 | 0.9 | 80 | 1,242,626 | 1.9 |
| Pacific Southwest | — | — | — | 3 | 372,998 | 0.6 | 4 | 235,063 | 0.4 |
| Republic | — | — | — | 67 | 521,405 | 0.9 | — | — | — |
| Trans World | — | — | — | 70 | 4,400,336 | 7.5 | 91 | 6,001,027 | 9.4 |
| Southwest | — | — | — | 10 | 445,107 | 0.8 | 3 | 89,150 | 0.1 |
| World | — | — | — | 7 | 982,150 | 1.7 | — | — | — |
| ALL Other | — | 120,905 | 1.7 | — | 3,135,878 | 5.4 | — | 1,823,588 | 2.9 |
| Total | 6 | 7,104,022 | 100.0 | 100 | 58,423,782 | 100.0 | 100 | 63,845,126 | 100.0 |

1/ Pan American did not serve 100 domestic markets in 1979.

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN PIEDMONT'S TOP 100 RRM MARKETS
1979, 1984 & YE SEPT. 30, 1988

| | 1979 | | | 1984 | | | YE SEPT. 30, 1988 | | |
|----------------|----------------|-----------|----------------|----------------|------------|----------------|-------------------|------------|----------------|
| | No. of Markets | RRM (000) | Percent of RRM | No. of Markets | RRM (000) | Percent of RRM | No. of Markets | RRM (000) | Percent of RRM |
| Piedmont | 100 | 1,339,660 | 30.1 | 100 | 2,631,995 | 16.4 | 100 | 4,014,318 | 16.8 |
| Competitors | | | | | | | | | |
| American | 5 | 192,594 | 4.3 | 28 | 1,307,941 | 8.0 | 99 | 2,332,498 | 9.8 |
| USAir | 24 | 53,889 | 1.2 | 77 | 399,801 | 2.4 | 89 | 517,251 | 2.2 |
| Brantiff | 6 | 12,339 | 0.3 | 7 | 175,471 | 1.1 | 17 | 135,025 | 0.6 |
| Continental | 2 | 55,812 | 1.3 | 11 | 125,121 | 0.8 | 61 | 2,493,272 | 10.4 |
| Delta | 31 | 976,750 | 22.0 | 85 | 2,449,450 | 15.0 | 91 | 2,893,944 | 12.1 |
| Eastern | 46 | 997,776 | 22.4 | 74 | 4,474,553 | 27.4 | 79 | 4,044,079 | 16.9 |
| National | 4 | 13,556 | 0.3 | — | — | — | — | — | — |
| Northwest | 4 | 17,716 | 0.4 | 18 | 200,198 | 1.2 | 51 | 344,440 | 1.4 |
| Republic | 11 | 17,232 | 0.4 | 29 | 50,514 | 0.3 | — | — | — |
| Trans World | 8 | 210,259 | 4.7 | 43 | 447,894 | 2.7 | 60 | 2,140,440 | 9.0 |
| United | 33 | 526,764 | 11.9 | 76 | 778,642 | 4.8 | 89 | 2,445,511 | 10.2 |
| Ozark | 7 | 2,722 | 0.1 | 33 | 51,670 | 0.3 | — | — | — |
| Pan American | — | — | — | 33 | 891,461 | 5.5 | 42 | 2,007,889 | 8.4 |
| People Express | — | — | — | 15 | 1,457,476 | 8.9 | — | — | — |
| America West | — | — | — | — | — | — | 4 | 203,155 | 0.9 |
| ALL Other | — | 27,905 | 0.6 | — | 827,905 | 5.1 | — | 307,697 | 1.3 |
| Total | 100 | 4,444,974 | 100.0 | 100 | 16,320,097 | 100.0 | 100 | 23,879,519 | 100.0 |

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN TRANS WORLD'S TOP 100 RRM MARKETS
1979, 1984 & YE SEPT. 30, 1988

| | 1979 | | | 1984 | | | YE SEPT. 30, 1988 | | |
|--------------------|----------------|------------|----------------|----------------|------------|----------------|-------------------|------------|----------------|
| | No. of Markets | RRM (000) | Percent of RRM | No. of Markets | RRM (000) | Percent of RRM | No. of Markets | RRM (000) | Percent of RRM |
| Trans World | 100 | 14,601,829 | 38.1 | 100 | 8,356,611 | 16.3 | 100 | 11,120,423 | 16.8 |
| <u>Competitors</u> | | | | | | | | | |
| American | 75 | 10,699,335 | 27.9 | 95 | 10,135,320 | 19.7 | 100 | 9,725,555 | 14.7 |
| USAir | 32 | 501,024 | 1.3 | 72 | 1,050,096 | 2.0 | 76 | 1,079,935 | 1.6 |
| Branniff | 72 | 317,363 | 0.8 | 42 | 376,797 | 0.7 | 70 | 1,037,910 | 1.6 |
| Continental | 38 | 1,209,220 | 3.2 | 62 | 1,974,889 | 3.8 | 96 | 9,678,629 | 14.6 |
| Delta | 78 | 370,437 | 1.0 | 95 | 2,164,800 | 4.2 | 100 | 5,601,928 | 8.5 |
| Eastern | 66 | 362,694 | 0.9 | 94 | 4,447,656 | 8.7 | 88 | 4,951,388 | 7.5 |
| Frontier | 16 | 121,189 | 0.3 | 54 | 252,089 | 0.5 | — | — | — |
| National | 8 | 71,655 | 0.2 | — | — | — | — | — | — |
| Northwest | 40 | 377,266 | 1.0 | 73 | 1,068,348 | 2.1 | 93 | 2,378,173 | 3.6 |
| Pacific Southwest | 3 | 107,904 | 0.3 | 1 | 265,261 | 0.5 | 1 | 134,893 | 0.2 |
| United | 53 | 8,781,529 | 22.9 | 99 | 11,287,002 | 22.0 | 99 | 14,622,801 | 22.1 |
| Western | 9 | 247,749 | 0.6 | 51 | 526,334 | 1.0 | — | — | — |
| Ozark | 22 | 51,119 | 0.1 | 37 | 609,910 | 1.2 | — | — | — |
| Ran American | — | — | — | 54 | 2,221,029 | 4.3 | 33 | 3,131,661 | 4.7 |
| People Express | — | — | — | 12 | 3,375,125 | 6.6 | — | — | — |
| Piedmont | 12 | 21,310 | 0.1 | 30 | 219,746 | 0.4 | 60 | 580,301 | 0.9 |
| Republic | 27 | 10,059 | 0.0 | 86 | 524,498 | 1.0 | — | — | — |
| World | — | — | — | 6 | 523,810 | 1.0 | — | — | — |
| America West | — | — | — | 5 | 56,756 | 0.1 | 18 | 620,800 | 0.9 |
| Southwest | — | — | — | 5 | 701 | 0.0 | 18 | 456,357 | 0.7 |
| ALL Other | — | 487,506 | 1.3 | — | 1,900,928 | 3.7 | — | 1,112,403 | 1.7 |
| Total | 100 | 38,339,238 | 100.0 | 100 | 51,337,706 | 100.0 | 100 | 66,233,162 | 100.0 |

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

10. *Journal of the American Medical Association*, 2000; 283: 2689-2695.

ANALYSIS OF COMPETITION IN UNITED'S TOP 100 RRM MARKETS
1979, 1984 & YE SPT. 30, 1988

| | 1979 | | | 1984 | | | YE SPT. 30, 1988 | | |
|-------------------|----------------|------------|----------------|----------------|------------|----------------|------------------|------------|----------------|
| | No. of Markets | RRM (000) | Percent of RRM | No. of Markets | RRM (000) | Percent of RRM | No. of Markets | RRM (000) | Percent of RRM |
| United | 100 | 21,852,360 | 43.8 | 100 | 23,429,929 | 40.6 | 100 | 26,052,443 | 37.0 |
| Competitors | | | | | | | | | |
| American | 45 | 9,768,678 | 19.6 | 95 | 10,764,576 | 13.7 | 98 | 10,115,026 | 14.4 |
| USAir | 10 | 41,681 | 0.1 | 47 | 535,814 | 0.9 | 75 | 1,257,802 | 1.8 |
| Braniff | 82 | 532,410 | 1.2 | 33 | 285,533 | 0.5 | 52 | 853,463 | 1.2 |
| Continental | 45 | 3,019,369 | 6.1 | 82 | 2,923,314 | 5.1 | 99 | 9,220,461 | 13.1 |
| Delta | 50 | 425,741 | 0.9 | 84 | 1,153,156 | 2.0 | 98 | 3,720,986 | 5.3 |
| Eastern | 60 | 649,596 | 1.3 | 73 | 1,273,243 | 2.2 | 70 | 1,359,193 | 1.9 |
| Frontier | 7 | 138,270 | 0.3 | 42 | 571,135 | 1.0 | — | — | — |
| National | 13 | 165,321 | 0.3 | — | — | — | — | — | — |
| Northwest | 57 | 2,024,570 | 4.1 | 81 | 2,618,542 | 4.5 | 94 | 3,764,703 | 5.4 |
| Pan American | 5 | 538,312 | 1.1 | 56 | 1,691,961 | 2.9 | 49 | 2,276,545 | 3.2 |
| Trans World | 65 | 8,056,192 | 16.2 | 67 | 4,507,740 | 7.8 | 83 | 5,773,993 | 8.2 |
| Western | 31 | 1,837,496 | 3.7 | 51 | 2,095,823 | 3.6 | — | — | — |
| People Express | — | — | — | 7 | 905,814 | 1.6 | — | — | — |
| Pacific Southwest | 2 | 81,404 | 0.2 | 8 | 832,833 | 1.4 | 7 | 484,599 | 0.7 |
| Republic | 17 | 14,504 | 0.0 | 74 | 509,015 | 0.9 | — | — | — |
| Southwest | — | — | — | 8 | 178,219 | 0.3 | 13 | 423,801 | 0.6 |
| World | — | — | — | 9 | 1,375,866 | 2.4 | — | — | — |
| America West | — | — | — | 2 | 9,751 | 0.0 | 41 | 981,191 | 1.4 |
| Piedmont | 10 | 20,780 | 0.0 | 36 | 153,168 | 0.3 | 51 | 360,891 | 0.5 |
| All Other | — | 626,362 | 1.3 | — | 1,861,636 | 3.2 | — | 3,673,960 | 5.2 |
| Total | 100 | 49,843,046 | 100.0 | 100 | 57,677,073 | 100.0 | 100 | 70,319,067 | 100.0 |

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN TRANS WORLD'S TOP 100 RRM MARKETS
1979, 1984 & YE SEPT. 30, 1988

| | 1979 | | | 1984 | | | YE SEPT. 30, 1988 | | |
|-------------------|----------------|------------|---------------|----------------|------------|---------------|-------------------|------------|---------------|
| | No. of Markets | RM (000) | Percent of RM | No. of Markets | RM (000) | Percent of RM | No. of Markets | RM (000) | Percent of RM |
| Trans World | 100 | 14,601,829 | 38.1 | 100 | 8,356,611 | 16.3 | 100 | 11,120,423 | 16.8 |
| Competitors | | | | | | | | | |
| American | 75 | 10,699,335 | 27.9 | 95 | 10,135,320 | 19.7 | 100 | 9,725,555 | 14.7 |
| USAir | 32 | 501,024 | 1.3 | 72 | 1,050,096 | 2.0 | 76 | 1,079,935 | 1.6 |
| Branniff | 72 | 317,363 | 0.8 | 42 | 376,797 | 0.7 | 70 | 1,037,910 | 1.6 |
| Continental | 38 | 1,209,220 | 3.2 | 62 | 1,974,889 | 3.8 | 96 | 9,678,629 | 14.6 |
| Delta | 78 | 370,487 | 1.0 | 95 | 2,164,800 | 4.2 | 100 | 5,601,928 | 8.5 |
| Eastern | 66 | 362,694 | 0.9 | 94 | 4,447,656 | 8.7 | 83 | 4,951,388 | 7.5 |
| Frontier | 16 | 121,189 | 0.3 | 54 | 252,089 | 0.5 | — | — | — |
| National | 8 | 71,655 | 0.2 | — | — | — | — | — | — |
| Northwest | 40 | 377,266 | 1.0 | 73 | 1,068,348 | 2.1 | — | — | — |
| Pacific Southwest | 3 | 107,904 | 0.3 | 1 | 265,261 | 0.5 | 93 | 2,378,173 | 3.6 |
| United | 53 | 8,781,529 | 22.9 | 99 | 11,287,002 | 22.0 | 1 | 134,893 | 0.2 |
| Western | 9 | 247,749 | 0.6 | 51 | 526,334 | 1.0 | 99 | 14,622,801 | 22.1 |
| Ozark | 22 | 51,119 | 0.1 | 37 | 609,910 | 1.2 | — | — | — |
| Ran American | — | — | — | 54 | 2,221,029 | 4.3 | — | — | — |
| People Express | — | — | — | 12 | 3,375,125 | 6.6 | 33 | 3,131,661 | 4.7 |
| Piedmont | 12 | 21,310 | 0.1 | 30 | 219,746 | 0.4 | — | — | — |
| Republic | 27 | 10,059 | 0.0 | 86 | 524,498 | 1.0 | 60 | 580,301 | 0.9 |
| World | — | — | — | 6 | 523,810 | 1.0 | — | — | — |
| America West | — | — | — | 5 | 56,756 | 0.1 | — | — | — |
| Southwest | — | — | — | 5 | 701 | 0.0 | — | — | — |
| All Other | — | 487,506 | 1.3 | — | 1,900,928 | 3.7 | — | 1,112,403 | 1.7 |
| Total | 100 | 38,339,238 | 100.0 | 100 | 51,337,706 | 100.0 | 100 | 66,233,162 | 100.0 |

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN USAIR'S TOP 100 RM MARKETS
1979, 1984 & YE SEPT. 30, 1988

| | 1979 | | | 1984 | | | YE SEPT. 30, 1988 | | |
|-------------------|-------------------|-------------|------------------|-------------------|-------------|------------------|-------------------|-------------|------------------|
| | No. of Markets | RM (000) | Percent of RM | No. of Markets | RM (000) | Percent of RM | No. of Markets | RM (000) | Percent of RM |
| USAir | 100 | 2,663,673 | 47.3 | 100 | 3,646,609 | 13.5 | 100 | 6,295,377 | 17.0 |
| Competitors | | | | | | | | | |
| American | 75 | 753,224 | 13.4 | 74 | 5,838,417 | 21.6 | 98 | 5,209,544 | 14.0 |
| Braniff | 28 | 28,065 | 0.5 | 15 | 197,041 | 0.7 | 27 | 304,548 | 0.8 |
| Delta | 38 | 251,196 | 4.5 | 77 | 740,348 | 2.7 | 93 | 1,587,020 | 4.3 |
| Eastern | 86 | 353,750 | 6.3 | 94 | 1,510,953 | 5.6 | 89 | 2,046,788 | 5.5 |
| Northwest | 14 | 426,809 | 7.6 | 36 | 519,441 | 1.9 | 94 | 1,056,593 | 2.8 |
| Trans World | 60 | 675,759 | 12.0 | 71 | 3,994,315 | 14.8 | 79 | 3,966,215 | 10.7 |
| United | 43 | 243,365 | 4.3 | 92 | 5,435,952 | 20.1 | 100 | 8,409,337 | 22.6 |
| Western | 1 | 159,213 | 2.8 | 10 | 92,956 | 0.3 | — | — | — |
| Continental | — | — | — | 19 | 649,334 | 2.4 | 98 | 3,759,386 | 10.1 |
| Pan American | — | — | — | 59 | 929,337 | 3.4 | 58 | 1,700,991 | 4.6 |
| People Express | — | — | — | 20 | 1,714,504 | 6.3 | — | — | — |
| Piedmont | 16 | 18,369 | 0.3 | 60 | 328,321 | 1.2 | 78 | 419,988 | 1.1 |
| Republic | 13 | 8,546 | 0.2 | 51 | 203,699 | 0.8 | — | — | — |
| World | — | — | — | 3 | 519,484 | 1.9 | — | — | — |
| Alaska | — | — | — | — | — | — | 13 | 263,027 | 0.7 |
| America West | — | — | — | — | — | — | 22 | 278,640 | 0.8 |
| Pacific Southwest | — | — | — | — | — | — | 20 | 1,205,811 | 3.2 |
| Southwest | — | — | — | — | — | — | 5 | 185,560 | 0.5 |
| ALL Other | — | 53,891 | 1.0 | — | 687,714 | 2.5 | — | 448,585 | 1.2 |
| Total | 100 | 5,635,860 | 100.0 | 100 | 27,008,475 | 100.0 | 100 | 37,137,410 | 100.0 |

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

COMPETITION IN THE TOP 50
DOMESTIC MARKETS

Table I-30

Objective: To show the changes in carrier market shares in the top 50 RPM markets based on 1988 rankings and to measure the change in average number of carriers per market.

Data Sources: Origin-Destination Survey of Airline Passenger Traffic, Table 10.

Observations/Interpretation:

Following the removal of route restrictions in 1978, carriers were free to enter markets they previously could not serve. New entrants also entered some of these markets. As a result, the average number of carriers per market in the top ranked RPM markets increased as follows:

| <u>Year</u> | <u>Carriers with a 1% or more Share of RPM</u> | |
|-------------|--|---------------------------|
| | <u>Total, Top 50 markets</u> | <u>Average per Market</u> |
| 1979 | 266 | 5.3 |
| 1984 | 425 | 8.5 |
| 1988 | 437 | 8.7 |

The change from 1979 to 1988 in the average market was a 64 percent increase in carriers, or roughly an increase of 3.4 carriers per market. These markets represent about 25 percent of total domestic RPM traffic.

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

| City-Pair | Year | Rank | Pass. Miles (000) | Carrier Market Shares (%) | |
|------------------------|------|------|-------------------------|---|--|
| | | | | | |
| Los Angeles-New York | 1988 | 1 | 7,589,640 | AA23 UA23 TM16 CO14 PA13 DL03 PA03 NW02 AL01 EN01 HP01 MC01 | |
| | 1984 | 1 | 6,915,700 | AA30 UA21 TM14 PE09 WC07 PA06 CL04 EA03 CO02 AL01 DL01 NW01 | |
| | 1979 | 1 | 5,131,099 | AA45 TW27 UA24 UK02 CL01 FA01 NA01 | |
| New York-San Francisco | 1988 | 2 | 4,987,612 | UA35 AA18 TM17 CO13 PA08 DL03 NW03 EA02 AL01 EN01 | |
| | 1984 | 2 | 3,475,773 | UA31 AA26 TM20 PA11 CO03 EA03 DL02 AL01 EN01 NW01 UK01 | |
| | 1979 | 2 | 3,496,897 | AA37 UA30 TM29 UK02 DL01 EA01 | |
| Honolulu-Los Angeles | 1988 | 3 | 3,925,364 | UA25 DL18 CO17 AA10 GM07 HA07 TW06 PA06 NW04 | |
| | 1984 | 3 | 3,427,060 | UA41 WA17 AA15 WO11 NA07 PA05 CO03 | |
| | 1979 | 3 | 3,249,678 | UA42 CO23 WA15 PA09 NW07 EN03 UK01 | |
| Miami-New York | 1988 | 4 | 2,390,860 | FA53 PA26 CO09 TW07 AA01 EN01 DL01 PI01 | |
| | 1984 | 5 | 2,180,382 | FA62 PA19 JW05 PE04 QS03 TW02 PI01 QH01 | |
| | 1979 | 4 | 2,324,920 | FA59 NA23 DL10 EN03 QH02 UK02 | |
| Chicago-Los Angeles | 1988 | 5 | 2,133,421 | UA50 AA20 CO12 EN04 NW04 TW04 HP02 NW02 DL01 EA01 | |
| | 1984 | 13 | 1,376,750 | UA37 AA30 CO13 CL06 TW04 NW03 EN02 DL01 EA01 RC01 WA01 | |
| | 1979 | 5 | 2,204,348 | AA36 UA26 CO25 TW12 | |
| Chicago-New York | 1988 | 6 | 2,084,909 | UA44 AA23 CO15 ML10 TW04 PA02 AL01 NW01 PI01 | |
| | 1984 | 4 | 2,221,828 | AA29 UA28 ML17 PE09 TW08 PA04 CL01 EA01 NW01 PI01 | |
| | 1979 | 7 | 1,704,506 | AA45 TW29 UA23 NW02 AL01 UK01 | |

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

| City-Pair | Year | Rank | Pass. Miles (000) | Carrier Market Shares (%) |
|-------------------------|------|------|-------------------------|--|
| Honolulu-San Francisco | 1988 | 7 | 2,037,651 | UA35 OO17 HA16 DL13 AA10 NW09 TW01 |
| | 1984 | 7 | 1,823,068 | UA42 NW21 WA17 PA10 AA05 CO04 |
| | 1979 | 8 | 1,656,244 | UA49 WA18 NW17 PA14 UK02 |
| Ft. Lauderdale-New York | 1988 | 8 | 2,010,082 | DL47 EA26 CO12 TW11 PT02 AA01 EN01 UA01 |
| | 1984 | 8 | 1,722,192 | DL55 EA38 QSO6 |
| | 1979 | 6 | 1,907,983 | EA41 DL40 NA17 TW01 UK01 |
| Los Angeles-Washington | 1988 | 9 | 1,943,725 | UA32 AA21 CO14 TW11 NW05 AL04 EN04 DL03 EA03 PA02 |
| | 1984 | 11 | 1,423,644 | UA35 AA32 TW14 AL05 CO03 EA03 NW02 EN01 DL01 PA01 WA01 |
| | 1979 | 11 | 1,168,067 | AA42 UA26 TW25 DL02 EA02 EN01 CO01 NA01 UK01 |
| Boston-Los Angeles | 1988 | 10 | 1,791,145 | AA32 UA20 TW18 CO09 NW07 DL05 EA04 PA03 AL02 PT01 |
| | 1984 | 15 | 1,233,911 | AA35 TW28 UA18 NW05 AL03 CO03 DL03 EA03 EN01 FC01 |
| | 1979 | 12 | 1,109,671 | AA53 TW40 UA05 DL01 EA01 UK01 |
| New York-Orlando | 1988 | 11 | 1,625,262 | EA30 DL27 CO18 TW13 PA03 AA02 EN02 PT02 AL01 UA01 |
| | 1984 | 22 | 975,936 | EA48 DL19 PA12 QSO9 NW04 PT03 TW03 FE01 |
| | 1979 | 22 | 789,262 | EA66 NA18 DL14 |
| Honolulu-New York | 1988 | 12 | 1,583,922 | CO30 UA28 TW15 AA12 PA10 DL03 NW02 |
| | 1984 | 10 | 1,528,799 | UA48 AA31 PA09 WO07 WA02 CO01 NW01 |
| | 1979 | 20 | 863,055 | UA84 EN10 UK03 NW02 PA01 |

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

| City-Pair | Year | Rank | Pass. Miles (000) | Carrier Market Shares (%) | |
|---------------------------|------|------|-------------------------|---|------|
| | | | | 1979 | 1988 |
| San Francisco-Washington | 1988 | 13 | 1,556,522 | UA54 TW14 CO07 AA05 BN04 DL04 EA04 NW04 AL03 PA01 | UA01 |
| | 1984 | 19 | 1,044,033 | UA52 TW17 AA09 AL05 CO04 EA04 NW02 HN01 DL01 FL01 PA01 WA01 | UA01 |
| | 1979 | 17 | 914,789 | UA44 TW36 AA13 DL02 EA02 UK01 | UA01 |
| Dallas/Ft. Worth-New York | 1988 | 14 | 1,519,792 | AA56 DL16 BN11 CO05 TW05 PA03 AL01 EA01 NW01 PT01 UA01 | UA01 |
| | 1984 | 12 | 1,397,941 | AA60 DL18 BN06 TW05 PA04 PT02 AL01 EA01 ML01 UA01 UK01 | UA01 |
| | 1979 | 15 | 938,848 | AA53 BN42 DL03 EA01 UK01 | UA01 |
| Boston-San Francisco | 1988 | 15 | 1,459,134 | UA37 TW29 AA09 NW07 CO06 DL05 AL02 EA02 PA01 UK01 | UA01 |
| | 1984 | 17 | 1,065,729 | UA35 TW34 AA11 EA04 NW04 AL03 CO03 DL03 RC02 HN01 | UA01 |
| | 1979 | 18 | 885,257 | TW52 UA27 AA18 DL01 EA01 UK01 | UA01 |
| Chicago-San Francisco | 1988 | 16 | 1,428,882 | UA64 AA17 CO05 BN03 NW03 TW03 DL02 EA01 WN01 | UA01 |
| | 1984 | 18 | 1,058,316 | UA45 AA27 PA11 CO05 NW03 TW03 HN01 EA01 RC01 WA01 | UA01 |
| | 1979 | 9 | 1,212,385 | AA42 UA36 TW20 UK01 | UA01 |
| Los Angeles-Miami | 1988 | 17 | 1,400,171 | EA51 PA27 CO09 DL04 AA02 BN02 UA02 NW01 TW01 | UA01 |
| | 1984 | 24 | 935,614 | EA66 PA15 AA04 CO04 DL04 TW02 UA02 HN01 QS01 UK01 | UA01 |
| | 1979 | 14 | 952,137 | NA60 WA22 FA06 DL04 UK03 AA02 HN01 CO01 | UA01 |
| Denver-New York | 1988 | 18 | 1,311,500 | UA51 CO35 TW08 AA02 AL01 BN01 DL01 NW01 | UA01 |
| | 1984 | 14 | 1,293,789 | UA48 CO27 TW11 AA04 PB03 FL02 AL01 DL01 EA01 JW01 | UA01 |
| | 1979 | 16 | 924,808 | UA59 TW34 CO03 DL02 BN01 UK01 | UA01 |

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

| City-Pair | Year | Rank | Pass. Miles (000) | Carrier Market Shares (%) | |
|--------------------------|------|------|-------------------------|--|--|
| | | | | | |
| New York-West Palm Beach | 1988 | 19 | 1,293,137 | EA34 CO23 DL22 TW17 AA01 EN01 | |
| | 1984 | 9 | 1,633,534 | PE43 EA28 DL13 PA08 QS05 TW02 CH01 | |
| | 1979 | 39 | 567,099 | EA50 NA42 DL05 CH02 UK01 | |
| New York-Phoenix | 1988 | 20 | 1,193,094 | AA24 TW20 CO19 HP16 FA06 EA04 DL03 NW03 AL02 EN02 PT01 | |
| | 1984 | 26 | 836,930 | AA47 TW25 UA07 FA06 CO04 DL03 RC03 AL02 EN02 NW01 WA01 | |
| | 1979 | 36 | 607,508 | AA64 TW32 AL01 EN01 CO01 DL01 UK01 | |
| Chicago-Phoenix | 1988 | 21 | 1,181,383 | UA31 AA22 HP17 ML12 WN05 CO04 EN03 NW02 TW02 DL01 EA01 | |
| | 1984 | 36 | 706,261 | AA43 UA29 RC10 CO06 TW03 EN02 NW02 WA02 DL01 EA01 FL01 | |
| | 1979 | 26 | 761,456 | AA64 TW36 | |
| Houston-New York | 1988 | 22 | 1,171,440 | CO76 AA06 TW06 PA04 DL03 PT02 AL01 EA01 NW01 | |
| | 1984 | 6 | 1,864,307 | PE46 EA14 CO12 DL11 PA08 TW04 AA02 | |
| | 1979 | 24 | 779,637 | EA51 DL31 EN09 UK03 AA02 CO02 NA02 | |
| New York-San Diego | 1988 | 23 | 1,146,174 | AA29 CO24 TW18 UA11 DL04 EN03 AL02 EA02 HP02 NW02 PA02 | |
| | 1984 | 33 | 723,246 | AA53 UA15 TW10 CO07 AL04 NW04 EA03 WA02 DL01 RC01 | |
| | 1979 | 58 | 462,817 | AA78 UA19 DL01 NA01 UK01 | |
| New York-Tampa | 1988 | 24 | 1,033,385 | EA34 CO21 DL18 TW12 PA05 PT04 AA02 NW01 UA01 | |
| | 1984 | 16 | 1,208,830 | PE37 EA29 DL22 PA06 TW03 PT02 NY01 | |
| | 1979 | 30 | 711,394 | EA52 DL31 NA15 UK01 | |

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

| City-Pair | Year | Rank | Pass. Miles (000) | Carrier Market Shares (%) |
|---------------------|------|------|-------------------------|---|
| Atlanta-New York | 1988 | 25 | 1,029,164 | DL54 EA34 PA04 TW03 AA02 AL01 PT01 UA01 |
| | 1984 | 30 | 765,572 | DL55 EA35 RC03 PT02 TW02 PA01 UK01 |
| | 1979 | 23 | 782,496 | DL55 EA41 PT02 UK01 |
| New York-Seattle | 1988 | 26 | 1,024,544 | UA42 TW20 CO12 NW11 AA06 DL04 EA02 AL01 |
| | 1984 | 27 | 815,134 | UA61 TM12 NW08 AA06 CO05 EA03 DL02 RC01 WA01 |
| | 1979 | 41 | 546,876 | UA60 NW32 EA03 TW02 UK02 |
| Detroit-Los Angeles | 1988 | 27 | 959,506 | NW58 AA10 UA09 CO08 WN05 DL04 EN02 TW02 EA01 GM01 |
| | 1984 | 20 | 1,026,378 | UA44 AA30 RC13 DL03 EN02 CO02 TW02 EA01 NW01 |
| | 1979 | 25 | 765,379 | AA61 UA33 DL02 TW02 NW01 |
| Chicago-Las Vegas | 1988 | 28 | 949,082 | UA31 ML24 AA19 HP12 EN03 CO03 DL03 EA01 NW01 TW01 WN01 |
| | 1984 | 40 | 633,840 | UA69 AA16 TW05 WA05 EN01 CO01 FLO1 OZ01 RC01 |
| | 1979 | 27 | 741,346 | TW57 UA41 AA01 |
| Las Vegas-New York | 1988 | 29 | 924,099 | AA22 CO02 HP20 TM11 UA11 EN05 DL04 EA04 NW02 |
| | 1984 | 50 | 553,655 | TW30 AA27 UA25 EA06 DL03 WA02 EN01 CO01 FLO1 NW01 OZ01 PA01 RC01 |
| | 1979 | 32 | 686,281 | TW58 UA32 AA06 EN02 DL01 NA01 UK01 |
| Honolulu-Seattle | 1988 | 30 | 888,155 | UA39 NW30 FA27 CO02 DL02 AA01 |
| | 1984 | 31 | 762,428 | UA50 NW44 WA06 |
| | 1979 | 13 | 1,034,486 | NW43 UA29 CO14 EN12 WA01 UK01 |

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

| City-Pair | Year | Rank | Pass. Miles (000) | Carrier Market Shares (%) |
|--------------------------|------|------|-------------------------|---|
| Los Angeles-Philadelphia | 1988 | 31 | 876,606 | UA32 TW30 AA07 CO07 AL06 FA06 IL04 NW03 PA03 UK01 |
| | 1984 | 28 | 795,201 | TW36 UA32 EA12 AA07 AL04 CO04 IL02 NW02 EN01 |
| | 1979 | 28 | 741,130 | TW47 AA28 UA22 IL01 EA01 UK01 |
| Houston-Los Angeles | 1988 | 32 | 850,441 | CO76 WN16 AA04 IL02 NW01 |
| | 1984 | 23 | 957,107 | CO38 MC25 WN18 FA10 AA03 PA03 IL02 UA01 |
| | 1979 | 34 | 613,238 | CO65 NA28 TI05 EN01 UK01 |
| Atlanta-Los Angeles | 1988 | 33 | 812,759 | DL68 FA19 AA03 CO03 UA03 EN01 NW01 TW01 |
| | 1984 | 44 | 579,231 | DL63 FA29 AA03 FL02 NW01 RC01 UA01 UK01 |
| | 1979 | 35 | 609,095 | DL67 EA31 TW01 UK01 |
| Miami-San Francisco | 1988 | 34 | 812,008 | FA44 PA26 UA09 CO06 IL06 AA03 EN03 TW02 NW01 |
| | 1984 | 38 | 675,479 | FA62 PA14 AA07 CO04 IL04 TW03 UA03 EN02 UK01 |
| | 1979 | 19 | 867,391 | NA57 EA27 UK08 AA04 IL02 WA01 |
| Chicago-Honolulu | 1988 | 35 | 795,620 | UA64 AA21 CO08 TW03 IL02 NW02 |
| | 1984 | 21 | 990,588 | UA70 AA16 WA11 NW02 CO01 PA01 |
| | 1979 | 10 | 1,199,395 | UA87 CO08 NW04 EN02 |
| Los Angeles-Seattle | 1988 | 36 | 767,123 | UA34 AS16 DL15 FS11 AL09 AA05 CO05 HP02 NW01 PA01 |
| | 1984 | 41 | 585,782 | UA47 WA29 FS14 NW06 CO03 |
| | 1979 | 29 | 716,402 | UA51 WA30 NA13 NW04 UK01 |

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

| City-Pair | Year | Rank | Pass. Miles (000) | Carrier Market Shares (%) | |
|---------------------------|------|------|-------------------------|--|------|
| | | | | 1979 | 1988 |
| Dallas-Los Angeles | 1988 | 37 | 726,762 | AA49 DL23 HN19 CO06 UA02 NW01 | |
| | 1984 | 43 | 580,184 | AA53 DL28 HN12 CO02 TW02 UA01 UK01 | |
| | 1979 | 21 | 846,620 | DL43 AA39 BN09 TI08 UK01 | |
| Los Angeles-San Francisco | 1988 | 33 | 722,504 | UA25 AL19 FS19 AA18 PA08 TW04 DL03 EA02 CO01 NW01 | |
| | 1984 | 32 | 757,404 | PA35 UA34 CC13 WA06 DL05 TW04 AA01 PA01 | |
| | 1979 | 37 | 593,825 | UA34 WA23 FS14 TW11 DL08 AA03 RW03 UK03 HN02 NA01 | |
| Chicago-Miami | 1988 | 39 | 711,065 | EA32 UA27 ML17 DL08 PA08 EN02 TW02 AA01 CO01 PT01 TW01 | |
| | 1984 | 52 | 546,682 | EA32 DL17 NW15 UA14 CL12 CH04 PT02 OZ01 RC01 TW01 UK01 | |
| | 1979 | 31 | 703,277 | EA44 DL40 NW13 UK02 UA01 | |
| Chicago-San Diego | 1988 | 40 | 700,393 | UA39 AA24 CO13 EN08 HF04 TW03 WN03 DL02 EA02 NW02 | |
| | 1984 | 74 | 431,505 | AA35 UA30 TW12 CO11 NW03 RC03 WA03 FL02 OZ02 | |
| | 1979 | 47 | 506,368 | AA64 UA34 CO01 | |
| Atlanta-San Francisco | 1988 | 41 | 673,284 | DL67 EA18 UA05 AA03 CO03 BN01 NW01 TW01 | |
| | 1984 | 55 | 509,910 | DL63 EA29 AA02 NW02 FL01 RC01 UA01 UK01 | |
| | 1979 | 49 | 494,804 | DL69 EA29 TW01 UK01 | |
| Chicago-Denver | 1988 | 42 | 667,762 | UA64 CO19 AA08 ML07 NW01 | |
| | 1984 | 49 | 559,466 | UA40 CO30 AA17 FL04 OZ04 TW02 | |
| | 1979 | 33 | 669,119 | CO46 UA34 TW18 OZ01 | |

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

| City-Pair | Year | Rank | Pass. Miles (000) | Carrier Market Shares (%) |
|----------------------------|------|------|-------------------------|--|
| Boston-Chicago | 1988 | 43 | 661,661 | UP46 AA19 ML13 NW10 OO06 AL02 DL01 PT01 TW01 |
| | 1984 | 45 | 578,347 | UP42 AA37 NW09 TW05 AL03 PT02 RC01 |
| | 1979 | 43 | 532,377 | AA40 TW29 UA28 AL01 |
| New York-Washington | 1988 | 44 | 655,665 | PA35 EA32 CO19 UA09 TW04 AA01 |
| | 1984 | 35 | 710,235 | EA35 NY32 FE23 PA07 TW03 |
| | 1979 | 42 | 537,321 | EA73 AA08 BN08 NAO3 RC02 TW02 UK02 |
| Philadelphia-San Francisco | 1988 | 45 | 655,494 | UA54 TW12 CO07 AA06 AL06 NW06 DL05 EA03 PA01 |
| | 1984 | 58 | 497,850 | UA45 TW20 AA10 CO05 EA05 NW05 AL03 DL03 EN02 |
| | 1979 | 52 | 486,721 | TW49 UA37 AA08 DL03 EA02 UK01 |
| Boston-New York | 1988 | 46 | 647,196 | PA32 EA31 CO25 PT04 TW03 AA02 NW01 |
| | 1984 | 25 | 848,262 | EA38 FE35 NY11 PT06 PA04 AA02 TW02 DL01 NW01 |
| | 1979 | 60 | 451,966 | EA76 AA11 DL06 TW04 BN02 AL01 UK01 |
| Boston-Orlando | 1988 | 47 | 636,586 | DL50 EA34 PT05 AA03 CO03 UA02 AL01 NW01 TW01 |
| | 1984 | 57 | 498,480 | DL50 EA34 NW06 PT05 AL01 NY01 QS01 |
| | 1979 | 96 | 302,962 | EA64 DL28 NW07 AL01 |
| Dallas-San Francisco | 1988 | 48 | 633,039 | AA42 DL26 BN21 UA06 CO03 |
| | 1984 | 51 | 550,025 | AA54 DL22 BN12 PA06 UA02 EA01 NW01 UK01 |
| | 1979 | 59 | 455,451 | AA58 DL40 BN01 UK01 |

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

| City-Pair | Pass. Miles | | Carrier Market Shares (%) | |
|-------------------|----------------|------|---------------------------|--|
| | Year | Rank | (000) | |
| Chicago-Dallas | 1988 | 49 | 608,688 | AA51 ML15 BN12 UA10 DL09 CO01 TW01 |
| | 1984 | 39 | 665,341 | AA50 ML19 UA10 DL09 HN07 OZ02 |
| | 1979 | 46 | 512,284 | AA53 BN45 DL01 OZ01 |
| Dallas-Washington | 1988 | 50 | 605,022 | AA46 DL23 BN20 CO03 UA02 AL01 EA01 ML01 NW01 PT01 TW01 |
| | 1984 | 65 | 455,165 | AA60 BN14 DL07 PT05 AL04 ML04 CB02 EA01 OZ01 UA01 |
| | 1979 | 84 | 339,575 | BN56 AA40 DL02 EA01 IK01 |

Carrier Decoding:

AA = American, AL = USAir, AS = Alaska, CL = Capital, CO = Continental, DL = Delta, EA = Eastern,
 FL = Frontier, GM = Air American, HA = Hawaiian, JK = Sunworld, LP = Hawaii Express, MC = Muse, MG = MGM Grand,
 ML = Midway, NW = Northwest, NY = New York Air, OC = Air Cal, OZ = Ozark, PA = Pan American, PE = People Express,
 PI = Piedmont, PS = Pacific Southwest, QG = Sky West, OH = Air Florida, OS = Northeastern, RC = Republic,
 SI = Jet America, TV = Transamerica, TW = Trans World, UA = United, UK = Unknown carrier, WA = Western,
 WN = Southwest, WO = World.

SOURCE: Origin-Destination Survey of Airline Passenger Traffic, Table 10, 1979, 1984 and YE September 30, 1988.

RELIANCE OF MAJOR CARRIERS ON
THEIR HUBBING COMPLEXES

Table I-31

Objective: To measure the relative importance of each major carrier's connecting hubs by comparing total departures and enplanements at the hubs to the carrier's system totals.

Data Sources: Airport Activity Statistics, Table 1, 1979, 1984, 1988. Data for 1988 are preliminary.

Observations/Interpretation:

These data show that the connecting hubs of each major carrier have become increasingly important as measured by relative share of total departures or enplanements. From 1979 to 1984, all carriers had increases in the hub percentages for both departures and enplanements. From 1984 to 1988, all except American and Continental had increases in both measures and for the 1979-1988 period all carriers had increases in both measures. The ranges for the percentages for each measure and for each year are as follows:

| | <u>Departures</u> | | <u>Enplanements</u> | |
|-------------|-------------------|----------------|---------------------|----------------|
| | <u>Percent</u> | <u>Carrier</u> | <u>Percent</u> | <u>Carrier</u> |
| <u>1988</u> | | | | |
| High | 54.4 | United | 57.6 | United |
| Low | 29.8 | Pan American | 35.2 | Pan American |
| <u>1984</u> | | | | |
| High | 49.8 | Continental | 56.1 | United |
| Low | 27.1 | Pan American | 30.5 | Pan American |
| <u>1979</u> | | | | |
| High | 42.8 | United | 48.6 | United |
| Low | 4.7 | Piedmont | 3.7 | Piedmont |

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Table I-31
Page 3 of 4

SHARES OF DEPARTURES AND ENPLANMENTS AT CONNECTING HUBS, MAJOR CARRIERS
1979, 1984 AND 1988

| Carrier | Hub | Departs and Enplanements | | | | | | Percent of Carrier Total | | | | | |
|---------|---------------|--------------------------|--------------|---------|--------------|---------|--------------|--------------------------|--------------|---------|--------------|---------|--------------|
| | | 1979 | | 1984 | | 1988 | | 1979 | | 1984 | | 1988 | |
| | | Departs | Enplanements | Departs | Enplanements | Departs | Enplanements | Departs | Enplanements | Departs | Enplanements | Departs | Enplanements |
| USair | Indianapolis | 9,235 | 370,179 | 8,504 | 345,346 | 13,966 | 794,370 | 3.2 | 2.6 | 2.6 | 2.0 | 2.7 | 2.4 |
| | Los Angeles | 0 | 0 | 1,644 | 163,517 | 42,480 | 2,641,566 | — | — | 0.5 | 1.0 | 8.2 | 8.1 |
| | Philadelphia | 17,412 | 984,784 | 19,277 | 1,025,987 | 36,294 | 2,421,229 | 6.1 | 7.0 | 5.8 | 6.0 | 7.0 | 7.5 |
| | Pittsburgh | 48,855 | 2,661,516 | 81,024 | 4,800,683 | 100,850 | 7,143,910 | 17.0 | 18.9 | 24.4 | 28.2 | 19.4 | 22.0 |
| | San Francisco | 0 | 0 | 1,054 | 106,547 | 30,308 | 2,040,012 | — | — | 0.3 | 0.6 | 5.8 | 6.3 |
| | Hub Total | 75,502 | 4,016,479 | 111,513 | 6,442,080 | 223,898 | 15,041,037 | 26.3 | 28.6 | 33.6 | 37.8 | 43.0 | 46.3 |
| | System Total | 237,602 | 14,060,431 | 332,068 | 17,046,890 | 520,572 | 32,466,061 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Note: Departures are scheduled aircraft departures completed. Enplanements include total passengers enplaned in scheduled service.

Source: Airport Activity Statistics, Table 1, 1979, 1984 and 1988. 1988 data are preliminary.

MARKETS REQUIRED TO REACH 25 AND 50 PERCENT OF SELECTED MAJOR AND
NATIONAL CARRIER ORIGIN-DESTINATION PASSENGERS AND NONSTOP SEGMENT
REVENUE PASSENGER-MILES.

Table I-32

Objective: One measure of carrier size and competitive vulnerability is the number of markets it serves. A carrier serving few markets can be more readily injured by additional competition in those markets.

The following two tables are designed to show the number of markets required to provide one quarter and one half of a carriers passengers and passenger-miles.

Data Sources: Two alternative data sources were used, nonstop segment revenue passenger miles from the ER-586 and T-9 segment data, which are weighted by market distance, and actual local passengers from the Origin-Destination Survey, Table 10.

Observation/Interpretation: The tables generally show that those carriers that have been successful have expanded the number of markets required to reach the major portion of their traffic, lessening any dependence on only a few markets. Three major carriers that have not been as successful domestically as the other majors, Eastern, Pan American, and Trans World, have actually seen an increase in their dependence on a relatively few markets through a reduction in the number of markets required to reach 25 or 50 percent of their passengers or RPM's.

Markets Required to Reach 25 and 50 Percent
of Selected Major and National Carrier Origin-Destination
Passengers, 1979, 1984, and Y.E. September 1988 1/

| Carrier 2/ | 1988 | | 1984 | | 1979 | |
|----------------------------|------|-----|------|-----|------|-----|
| | 25% | 50% | 25% | 50% | 25% | 50% |
| American Airlines | 30 | 143 | 15 | 60 | 10 | 37 |
| Air California | — | — | 4 | 9 | 2 | 5 |
| America West Airlines | 5 | 19 | 3 | 10 | — | — |
| Braniff Inc. | 10 | 30 | 5 | 12 | 12 | 41 |
| Continental Airlines | 20 | 72 | 10 | 30 | 8 | 26 |
| Frontier Airlines | — | — | 13 | 65 | 8 | 39 |
| Texas Inter. Airlines | — | — | — | — | 5 | 16 |
| People Express | — | — | 3 | 7 | — | — |
| New York Air | — | — | 1 | 2 | — | — |
| Delta Air Lines | 37 | 154 | 27 | 78 | 24 | 79 |
| Western Airlines | — | — | 7 | 27 | 5 | 19 |
| Eastern Air Lines | 8 | 45 | 6 | 47 | 6 | 48 |
| Midway Airlines | 3 | 10 | 2 | 3 | — | — |
| Air Florida | — | — | 4 | 10 | 3 | 6 |
| Northwest Airlines | 22 | 107 | 7 | 29 | 7 | 23 |
| Hughes Airwest | — | — | — | — | 8 | 25 |
| North Central Airlines | — | — | — | — | 12 | 41 |
| Southern Airways | — | — | — | — | 9 | 34 |
| Republic | — | — | 27 | 94 | 20 | 71 |
| Pan American Airways | 2 | 4 | 3 | 8 | 1 | 1 |
| National Airlines | — | — | — | — | 4 | 12 |
| TWA, Inc. | 5 | 19 | 5 | 15 | 7 | 23 |
| Ozark Air Lines | — | — | 6 | 13 | 6 | 17 |
| Southwest Airlines | 7 | 54 | 6 | 18 | 2 | 6 |
| Muse Air Corporation | — | — | 1 | 3 | — | — |
| United Airlines | 18 | 76 | 19 | 73 | 20 | 76 |
| USAir | 20 | 81 | 13 | 63 | 14 | 50 |
| Piedmont | 33 | 154 | 14 | 77 | 9 | 35 |
| Pacific Southwest Airlines | 4 | 11 | 4 | 10 | 3 | 8 |

1/ Passengers are those derived from the 10 percent sample in the Origin-Destination Survey of Airline Passenger Traffic, Table 10, Local.

2/ Corporate name and ownership that of carrier in 1988. Subsidiary or merged carriers are indented.

Markets Required to Reach 25 and 50 Percent
of Selected Major and National Carrier Revenue Passenger-
Miles, 1979, 1984, and Y.E. September 1988 1/

| Carrier 2/ | 1988 | | 1984 | | 1979 | |
|----------------------------|------|-----|------|-----|------|-----|
| | 25% | 50% | 25% | 50% | 25% | 50% |
| American Airlines | 11 | 32 | 7 | 21 | 7 | 23 |
| Air California | — | — | 4 | 8 | N/A | N/A |
| America West Airlines | 5 | 13 | 3 | 6 | — | — |
| Braniff Inc. | 5 | 10 | 3 | 5 | 6 | 16 |
| Continental Airlines | 11 | 35 | 5 | 12 | 3 | 9 |
| Frontier Airlines | — | — | 6 | 14 | 5 | 12 |
| Texas Inter. Airlines | — | — | — | — | 3 | 7 |
| People Express | — | — | 3 | 6 | — | — |
| New York Air | — | — | 2 | 4 | — | — |
| Delta Air Lines | 16 | 48 | 12 | 39 | 11 | 30 |
| Western Airlines | — | — | 2 | 10 | 4 | 11 |
| Eastern Air Lines | 11 | 32 | 13 | 40 | 16 | 40 |
| Midway Airlines | 3 | 8 | 2 | 4 | — | — |
| Air Florida | — | — | 6 | 13 | — | — |
| Northwest Airlines | 9 | 28 | 5 | 13 | 5 | 13 |
| Hughes Airwest | — | — | — | — | 9 | 19 |
| North Central Airlines | — | — | — | — | 5 | 17 |
| Southern Airways | — | — | — | — | 7 | 18 |
| Republic | — | — | 12 | 34 | 10 | 31 |
| Pan American Airways | 2 | 4 | 3 | 6 | 2 | 3 |
| National Airlines | — | — | — | — | 4 | 12 |
| TWA, Inc. | 5 | 19 | 5 | 15 | 7 | 23 |
| Ozark Air Lines | — | — | 6 | 13 | 6 | 17 |
| Southwest Airlines | 8 | 21 | 6 | 14 | N/A | N/A |
| Muse Air Corporation | — | — | 2 | 4 | — | — |
| United Airlines | 9 | 28 | 7 | 27 | 7 | 30 |
| USAir | 12 | 36 | 6 | 22 | 12 | 35 |
| Piedmont Aviation | 12 | 32 | 10 | 28 | 10 | 26 |
| Pacific Southwest Airlines | 4 | 10 | 3 | 9 | N/A | N/A |

1/ Revenue passenger-miles are those flown on domestic nonstop flight segments, ER-586 and T-9 segment data.

2/ Corporate name and ownership that of carrier in 1988. Subsidiary or merged carriers are indented.

CONCENTRATION IN CITY-PAIR MARKETS

Table I-33

Objective: To analyze city-pair concentration by comparing passengers and RPM's distributed by dominant carrier share. Changes over time indicate whether concentration is increasing or decreasing.

Data Sources: DOT Origin-Destination Survey, Table 12.

Observations/Interpretation: In contrast to point concentration, these exhibits reveal that concentration has declined in city pairs in each density category. As with points, the picture is quite different from one density category to another. While concentration in the more dense city pairs (500 passengers per day) has changed only modestly, the change has been dramatic in all other density categories. The only deviation from a general decline in concentration is for the more concentrated large city pairs, which still account for less than 10 percent of the traffic in large city pairs. Interestingly, however, in every instance the largest change was from 1979 to 1984, before concentration developed at the connecting hubs.

City-Pair Concentration
Distribution of Total RPM's (True O&D)
Based on Dominant Carrier Share 1/

| Period and City-Pair Density Based on O&D Passengers Per Day | Number of RPM's (000) | | | | | | Total |
|--|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | 90% or More | 80 to 89.9% | 70 to 79.9% | 60 to 69.9% | 50 to 59.9% | Under 50% | |
| Calendar 1968: | | | | | | | |
| 50-100 | 727 | 886 | 1,103 | 2,286 | 3,207 | 15,419 | 23,628 |
| 101-200 | 1,089 | 1,219 | 2,987 | 2,907 | 4,577 | 17,308 | 30,087 |
| 201-500 | 871 | 2,106 | 4,382 | 6,379 | 8,695 | 27,441 | 49,873 |
| 500+ | 899 | 2,050 | 5,926 | 10,235 | 20,951 | 82,164 | 122,214 |
| Total | <u>3,575</u> | <u>6,261</u> | <u>14,397</u> | <u>21,807</u> | <u>37,429</u> | <u>142,332</u> | <u>225,802</u> |
| Calendar 1984: | | | | | | | |
| 50-100 | 888 | 873 | 1,204 | 2,046 | 3,007 | 10,411 | 18,430 |
| 101-200 | 987 | 732 | 2,094 | 2,735 | 3,475 | 11,438 | 21,463 |
| 201-500 | 1,716 | 945 | 2,015 | 6,952 | 7,631 | 17,359 | 36,618 |
| 500+ | 373 | 2,436 | 1,682 | 12,356 | 16,336 | 61,209 | 94,392 |
| Total | <u>3,964</u> | <u>4,987</u> | <u>6,995</u> | <u>24,090</u> | <u>30,449</u> | <u>100,418</u> | <u>170,903</u> |
| Calendar 1979: | | | | | | | |
| 50-100 | 2,132 | 2,043 | 2,186 | 2,816 | 2,586 | 4,161 | 15,925 |
| 101-200 | 2,320 | 2,499 | 3,602 | 3,301 | 4,586 | 5,070 | 21,378 |
| 201-500 | 2,662 | 2,067 | 4,135 | 7,262 | 9,157 | 7,804 | 33,087 |
| 500+ | 156 | 744 | 3,612 | 8,379 | 17,065 | 37,212 | 67,169 |
| Total | <u>7,270</u> | <u>7,354</u> | <u>13,535</u> | <u>21,758</u> | <u>33,394</u> | <u>54,247</u> | <u>137,558</u> |

1/ Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Percentage Distribution of Total RPM's (True O&D)
Based on Dominant Carrier Share 1/

| Period and City-Pair Density Based on O&D Passengers Per Day | Percent Distribution of RPM's | | | | | | Total |
|--|-------------------------------|----------------|----------------|----------------|----------------|--------------|---------|
| | 90% or More | 80 to 89.9% | 70 to 79.9% | 60 to 69.9% | 50 to 59.9% | Under 50% | |
| Calendar 1988: | | | | | | | |
| 50-100 | 3.1% | 3.8% | 4.7% | 9.7% | 13.6% | 65.3% | 100.00% |
| 101-200 | 3.6 | 4.1 | 9.9 | 9.7 | 15.2 | 57.5 | 100.00 |
| 201-500 | 1.7 | 4.2 | 8.8 | 12.8 | 17.4 | 55.0 | 100.00 |
| 500+ | 0.7 | 1.7 | 4.8 | 8.4 | 17.1 | 67.2 | 100.00 |
| Total | 1.6 | 2.8 | 6.4 | 9.7 | 16.6 | 63.0 | 100.00 |
| Calendar 1984: | | | | | | | |
| 50-100 | 4.8 | 4.7 | 6.5 | 11.1 | 16.3 | 56.5 | 100.00 |
| 101-200 | 4.6 | 3.4 | 9.8 | 12.7 | 16.2 | 53.3 | 100.00 |
| 201-500 | 4.7 | 2.6 | 5.5 | 19.0 | 20.8 | 47.4 | 100.00 |
| 500+ | 0.4 | 2.6 | 1.8 | 13.1 | 17.3 | 64.8 | 100.00 |
| Total | 2.3 | 2.9 | 4.1 | 14.1 | 17.8 | 58.8 | 100.00 |
| Calendar 1979: | | | | | | | |
| 50-100 | 13.4 | 12.8 | 13.7 | 17.7 | 16.2 | 26.1 | 100.00 |
| 101-200 | 10.9 | 11.7 | 16.8 | 15.4 | 21.5 | 23.7 | 100.00 |
| 201-500 | 8.0 | 6.2 | 12.5 | 21.9 | 27.7 | 23.6 | 100.00 |
| 500+ | 0.2 | 1.1 | 5.4 | 12.5 | 25.4 | 55.4 | 100.00 |
| Total | 5.3 | 5.3 | 9.8 | 15.8 | 24.3 | 39.4 | 100.00 |

1/ Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

Table I-33
Page 3 of 12

City-Pair Concentration
Cumulative Percent Distribution of RPM's 1/
(Starting With Most Concentrated City-Pairs)

| Period and City-Pair Density Based on O&D Passengers Per Day | 90% or More | 80% or More | 70% or More | 60% or More | 50% or More |
|--|----------------|----------------|----------------|----------------|----------------|
| 50-100 (Psgs. per day): | | | | | |
| 1988 | 3.1% | 6.9% | 11.6% | 21.3% | 34.9% |
| 1984 | 3.8 | 9.5 | 16.0 | 27.1 | 43.4 |
| 1979 | 13.4 | 26.2 | 39.9 | 57.6 | 73.8 |
| 101-200: | | | | | |
| 1988 | 3.6 | 7.7 | 17.6 | 27.3 | 42.5 |
| 1984 | 4.6 | 8.0 | 17.8 | 30.5 | 46.7 |
| 1979 | 10.9 | 22.6 | 39.4 | 54.8 | 76.3 |
| 201-500: | | | | | |
| 1988 | 1.7 | 5.9 | 14.7 | 27.5 | 44.9 |
| 1984 | 4.7 | 7.3 | 12.8 | 31.8 | 52.6 |
| 1979 | 8.0 | 14.2 | 26.7 | 48.6 | 76.3 |
| 500+ | | | | | |
| 1988 | 0.7 | 2.4 | 7.2 | 15.6 | 32.7 |
| 1984 | 0.4 | 3.0 | 4.8 | 17.9 | 35.2 |
| 1979 | 0.2 | 1.3 | 6.7 | 19.2 | 44.6 |
| Total: | | | | | |
| 1988 | 1.6 | 4.4 | 10.8 | 20.5 | 37.1 |
| 1984 | 2.3 | 5.2 | 9.3 | 23.4 | 41.2 |
| 1979 | 5.3 | 10.6 | 20.4 | 36.2 | 60.5 |

1/ Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

Table I-33
Page 4 of 12

City-Pair Concentration
Cumulative Percent Distribution of RPM's 1/
(Starting With Least Concentrated City-Pairs)

| Period and City-Pair Density Based on O&D Passengers Per Day | Less Than | | | | |
|--|-----------|-------|-------|-------|-------|
| | 50% | 60% | 70% | 80% | 90% |
| 50-100 (Psgs. per day): | | | | | |
| 1988 | 65.3% | 78.9% | 88.6% | 93.3% | 97.1% |
| 1984 | 56.5 | 72.8 | 83.9 | 90.4 | 95.1 |
| 1979 | 26.1 | 42.3 | 60.0 | 73.7 | 86.5 |
| 101-200: | | | | | |
| 1988 | 57.5 | 72.7 | 82.4 | 92.3 | 96.4 |
| 1984 | 53.3 | 69.5 | 82.2 | 92.0 | 95.4 |
| 1979 | 23.7 | 45.2 | 60.6 | 77.4 | 89.1 |
| 201-500: | | | | | |
| 1988 | 55.0 | 72.4 | 85.2 | 94.0 | 98.2 |
| 1984 | 47.4 | 68.2 | 87.2 | 92.7 | 95.3 |
| 1979 | 23.6 | 51.3 | 73.2 | 85.7 | 91.9 |
| 500+ | | | | | |
| 1988 | 67.2 | 84.8 | 92.7 | 97.5 | 99.2 |
| 1984 | 64.8 | 82.1 | 95.2 | 97.0 | 99.6 |
| 1979 | 55.4 | 60.8 | 93.3 | 98.7 | 99.8 |
| Total: | | | | | |
| 1988 | 63.0 | 79.6 | 89.3 | 95.7 | 98.5 |
| 1984 | 58.8 | 76.6 | 90.7 | 94.8 | 97.7 |
| 1979 | 39.4 | 63.7 | 79.5 | 89.3 | 94.6 |

1/ Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Distribution of Total RPM's (True O&D)
Based on Dominant Carrier Share

| Period and City-Pair Density Based on O&D Passengers Per Day | Number of Dominant Carrier RPM's (000) | | | | | | Other Carrier's RPM's 1/ | Total |
|--|--|----------------|----------------|----------------|----------------|--------------|--------------------------------|---------|
| | 90% or More | 80 to 89.9% | 70 to 79.9% | 60 to 69.9% | 50 to 59.9% | Under 50% | | |
| Calendar 1988: | | | | | | | | |
| 50-100 | 690 | 752 | 831 | 1,486 | 1,758 | 5,629 | 12,482 | 23,628 |
| 101-200 | 1,031 | 1,035 | 2,222 | 1,894 | 2,494 | 6,218 | 15,193 | 30,087 |
| 201-500 | 832 | 1,785 | 3,278 | 4,145 | 4,811 | 10,330 | 24,693 | 49,877 |
| 500+ | 836 | 1,728 | 4,429 | 6,608 | 11,251 | 28,844 | 68,519 | 122,214 |
| Total | 3,389 | 5,299 | 10,760 | 14,133 | 20,314 | 51,020 | 120,887 | 225,807 |
| Calendar 1984: | | | | | | | | |
| 50-100 | 851 | 745 | 905 | 1,319 | 1,645 | 4,012 | 8,954 | 18,430 |
| 101-200 | 941 | 620 | 1,564 | 1,754 | 1,892 | 4,490 | 10,200 | 21,461 |
| 201-500 | 1,643 | 797 | 1,494 | 4,439 | 4,203 | 6,953 | 17,090 | 36,618 |
| 500+ | 364 | 2,012 | 1,265 | 7,911 | 9,070 | 22,872 | 50,898 | 94,392 |
| Total | 3,799 | 4,174 | 5,228 | 15,424 | 16,811 | 38,326 | 87,142 | 170,900 |
| Calendar 1979: | | | | | | | | |
| 50-100 | 2,033 | 1,728 | 1,639 | 1,826 | 1,414 | 1,729 | 5,555 | 15,925 |
| 101-200 | 2,218 | 2,128 | 2,696 | 2,144 | 2,531 | 2,190 | 7,470 | 21,378 |
| 201-500 | 2,596 | 1,733 | 3,072 | 4,683 | 5,056 | 3,409 | 12,537 | 33,067 |
| 500+ | 147 | 623 | 2,726 | 5,335 | 9,353 | 14,887 | 34,097 | 67,169 |
| Total | 6,993 | 5,213 | 10,134 | 13,998 | 18,354 | 22,216 | 59,658 | 137,558 |

1/ Total RPM's of the non-dominant carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

Table I-33
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City-Pair Concentration
Percentage Distribution of RPM's (True O&D)
Based on Dominant Carrier Share

| Period and City-Pair Density Based on O&D Passengers Per Day | Percent Distribution of Dominant Carrier RPM's | | | | | | Other Carrier's RPM's 1/ | Total |
|--|--|----------------|----------------|----------------|----------------|--------------|--------------------------------|---------|
| | 90% or More | 80 to 89.9% | 70 to 79.9% | 60 to 69.9% | 50 to 59.9% | Under 50% | | |
| Calendar 1988: | | | | | | | | |
| 50-100 | 2.9% | 3.2% | 3.5% | 6.3% | 7.4% | 23.8% | 52.8% | 100.00% |
| 101-200 | 3.4 | 3.4 | 7.4 | 6.3 | 8.3 | 20.7 | 50.5 | 100.00 |
| 201-500 | 1.7 | 3.6 | 6.6 | 8.3 | 9.6 | 20.7 | 49.5 | 100.00 |
| 500+ | 0.7 | 1.4 | 3.6 | 5.4 | 9.2 | 23.6 | 56.1 | 100.00 |
| Total | 1.5 | 2.3 | 4.8 | 6.3 | 9.0 | 22.6 | 53.5 | 100.00 |
| Calendar 1984: | | | | | | | | |
| 50-100 | 4.6 | 4.0 | 4.9 | 7.2 | 8.9 | 21.8 | 48.6 | 100.00 |
| 101-200 | 4.4 | 2.9 | 7.3 | 8.2 | 8.8 | 20.9 | 47.5 | 100.00 |
| 201-500 | 4.5 | 2.2 | 4.1 | 12.1 | 11.5 | 19.0 | 46.7 | 100.00 |
| 500+ | 0.4 | 2.1 | 1.3 | 8.4 | 9.6 | 24.2 | 53.9 | 100.00 |
| Total | 2.2 | 2.4 | 3.1 | 9.0 | 9.8 | 22.4 | 51.0 | 100.00 |
| Calendar 1979: | | | | | | | | |
| 50-100 | 12.8 | 10.9 | 10.3 | 11.5 | 8.9 | 10.9 | 34.9 | 100.00 |
| 101-200 | 10.4 | 10.0 | 12.6 | 10.0 | 11.8 | 10.2 | 34.9 | 100.00 |
| 201-500 | 7.8 | 5.2 | 9.3 | 14.2 | 15.3 | 10.3 | 37.9 | 100.00 |
| 500+ | 0.2 | 0.9 | 4.1 | 7.9 | 13.9 | 22.2 | 50.8 | 100.00 |
| Total | 5.1 | 4.5 | 7.4 | 10.2 | 13.3 | 16.2 | 43.4 | 100.00 |

1/ Total RPM's of the non-dominant carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

Table I-33
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City-Pair Concentration
Distribution of Total True O&D Passengers
Based on Dominant Carrier Share ^{1/}

| Period and City-Pair Density Based on O&D Passengers Per Day | Number of Passengers (000) | | | | | | Total |
|--|----------------------------|----------------|----------------|----------------|----------------|--------------|---------|
| | 90% or More | 80 to 89.9% | 70 to 79.9% | 60 to 69.9% | 50 to 59.9% | Under 50% | |
| Calendar 1968: | | | | | | | |
| 50-100 | 2,421 | 2,076 | 1,607 | 2,280 | 2,753 | 9,874 | 21,012 |
| 101-200 | 3,375 | 2,585 | 3,111 | 2,664 | 4,252 | 11,501 | 27,489 |
| 201-500 | 3,382 | 4,015 | 5,783 | 7,324 | 8,999 | 18,230 | 47,733 |
| 500+ | 2,014 | 4,047 | 7,163 | 14,060 | 29,062 | 80,367 | 136,714 |
| Total | 11,193 | 12,732 | 17,664 | 26,329 | 45,066 | 119,972 | 232,948 |
| Calendar 1964: | | | | | | | |
| 50-100 | 2,260 | 1,304 | 1,657 | 1,897 | 2,702 | 6,299 | 16,119 |
| 101-200 | 2,678 | 1,635 | 2,034 | 2,727 | 4,093 | 7,500 | 20,667 |
| 201-500 | 3,221 | 1,680 | 3,215 | 7,590 | 7,377 | 13,432 | 36,515 |
| 500+ | 1,233 | 3,231 | 3,654 | 19,023 | 23,887 | 62,954 | 113,982 |
| Total | 9,392 | 7,850 | 10,560 | 31,236 | 38,060 | 90,184 | 187,283 |
| Calendar 1979: | | | | | | | |
| 50-100 | 3,291 | 2,566 | 2,389 | 2,223 | 2,651 | 3,142 | 16,262 |
| 101-200 | 4,991 | 3,630 | 3,389 | 3,245 | 3,896 | 4,499 | 23,650 |
| 201-500 | 3,560 | 3,877 | 5,641 | 7,369 | 8,174 | 7,620 | 36,240 |
| 500+ | 286 | 2,407 | 8,439 | 14,376 | 16,591 | 30,650 | 72,744 |
| Total | 12,128 | 12,479 | 19,859 | 27,213 | 31,311 | 45,912 | 148,902 |

^{1/} Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Percentage Distribution of Total True O&D Passengers
Based on Dominant Carrier Share ^{1/}

| Period and City-Pair Density Based on O&D Passengers Per Day | Number of Passengers (000) | | | | | | Total |
|--|----------------------------|----------------|----------------|----------------|----------------|--------------|----------------|
| | 90% or More | 80 to 89.9% | 70 to 79.9% | 60 to 69.9% | 50 to 59.9% | Under 50% | |
| Calendar 1988: | | | | | | | |
| 50-100 | 11.5% | 9.9% | 7.7% | 10.9% | 13.1% | 47.0% | 100.00% |
| 101-200 | 12.3 | 9.4 | 11.3 | 9.7 | 15.5 | 41.8 | 100.00 |
| 201-500 | 7.1 | 8.4 | 12.1 | 15.3 | 18.9 | 38.2 | 100.00 |
| 500+ | 1.5 | 3.0 | 5.2 | 10.3 | 21.3 | 58.8 | 100.00 |
| Total | <u>4.8%</u> | <u>5.5%</u> | <u>7.6%</u> | <u>11.3%</u> | <u>19.3%</u> | <u>51.5%</u> | <u>100.00%</u> |
| Calendar 1984: | | | | | | | |
| 50-100 | 14.0% | 8.1% | 10.3% | 11.8% | 16.8% | 39.1% | 100.00% |
| 101-200 | 13.0 | 7.9 | 9.8 | 13.2 | 19.8 | 36.3 | 100.00 |
| 201-500 | 8.8 | 4.6 | 8.8 | 20.8 | 20.2 | 36.8 | 100.00 |
| 500+ | 1.1 | 2.8 | 3.2 | 16.7 | 21.0 | 55.2 | 100.00 |
| Total | <u>5.0%</u> | <u>4.2%</u> | <u>5.6%</u> | <u>16.7%</u> | <u>20.3%</u> | <u>48.2%</u> | <u>100.00%</u> |
| Calendar 1979: | | | | | | | |
| 50-100 | 20.2% | 15.8% | 14.7% | 13.7% | 16.3% | 19.3% | 100.00% |
| 101-200 | 21.1 | 15.3 | 14.3 | 13.7 | 16.5 | 19.0 | 100.00 |
| 201-500 | 9.8 | 10.7 | 15.6 | 20.3 | 22.6 | 21.0 | 100.00 |
| 500+ | 0.4 | 3.3 | 11.6 | 19.8 | 22.8 | 42.1 | 100.00 |
| Total | <u>8.1%</u> | <u>8.4%</u> | <u>13.3%</u> | <u>18.3%</u> | <u>21.0%</u> | <u>30.8%</u> | <u>100.00%</u> |

^{1/} Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

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City-Pair Concentration
Cumulative Percent Distribution of Total O&D Passengers 1/
(Starting With Most Concentrated City-Pairs)

| Period and City-Pair Density Based on O&D Passengers Per Day | 90% or More | 80% or More | 70% or More | 60% or More | 50% or More |
|--|----------------|----------------|----------------|----------------|----------------|
| 50-100 (Psgs. per day): | | | | | |
| 1988 | 11.5% | 21.4% | 29.1% | 40.0% | 53.1% |
| 1984 | 14.0 | 22.1 | 32.4 | 44.2 | 61.0 |
| 1979 | 20.2 | 36.0 | 50.7 | 64.4 | 80.7 |
| 101-200: | | | | | |
| 1988 | 12.3 | 21.7 | 33.0 | 42.7 | 58.2 |
| 1984 | 13.0 | 20.9 | 30.7 | 43.9 | 63.7 |
| 1979 | 21.1 | 36.4 | 50.7 | 64.4 | 80.9 |
| 201-500: | | | | | |
| 1988 | 7.1 | 15.5 | 27.6 | 42.9 | 61.8 |
| 1984 | 8.8 | 13.4 | 22.2 | 43.0 | 63.2 |
| 1979 | 9.8 | 20.5 | 36.1 | 56.4 | 79.0 |
| 500+ | | | | | |
| 1988 | 1.5 | 4.5 | 9.7 | 20.0 | 41.3 |
| 1984 | 1.1 | 3.9 | 7.1 | 23.8 | 44.8 |
| 1979 | 0.4 | 3.7 | 15.3 | 35.1 | 57.9 |
| Total: | | | | | |
| 1988 | 4.8 | 10.3 | 17.9 | 29.2 | 48.5 |
| 1984 | 5.0 | 9.2 | 14.8 | 31.5 | 51.8 |
| 1979 | 8.1 | 16.5 | 29.8 | 48.1 | 69.1 |

1/ Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

Table I-33
Page 10 of 12

City-Pair Concentration
Cumulative Percent Distribution of Total O&D Passengers 1/
(Starting With Least Concentrated City-Pairs)

| Period and City-Pair Density Based on O&D Passengers Per Day | Less Than | | | | |
|--|-----------|-------|-------|-------|-------|
| | 50% | 60% | 70% | 80% | 90% |
| 50-100 (Psgs. per day): | | | | | |
| 1988 | 47.0% | 60.1% | 71.0% | 78.7% | 88.6% |
| 1984 | 39.1 | 55.9 | 67.7 | 78.0 | 86.1 |
| 1979 | 19.3 | 35.60 | 49.3 | 64.0 | 79.1 |
| 101-200: | | | | | |
| 1988 | 41.8 | 57.3 | 67.0 | 78.3 | 87.7 |
| 1984 | 36.3 | 56.1 | 69.3 | 79.1 | 87.0 |
| 1979 | 19.0 | 35.5 | 49.2 | 63.5 | 64.8 |
| 201-500: | | | | | |
| 1988 | 38.2 | 57.1 | 72.4 | 84.5 | 92.9 |
| 1984 | 36.8 | 57.0 | 77.8 | 86.6 | 91.2 |
| 1979 | 21.0 | 43.6 | 63.9 | 79.5 | 90.2 |
| 500+ | | | | | |
| 1988 | 58.8 | 80.1 | 90.4 | 95.6 | 98.6 |
| 1984 | 55.2 | 76.2 | 92.9 | 96.1 | 98.9 |
| 1979 | 42.1 | 64.9 | 84.7 | 96.3 | 99.6 |
| Total: | | | | | |
| 1988 | 51.5 | 70.8 | 82.1 | 89.7 | 95.2 |
| 1984 | 48.2 | 68.5 | 85.2 | 90.8 | 95.0 |
| 1979 | 42.1 | 64.9 | 84.7 | 96.3 | 99.6 |

1/ Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Distribution of True O&D Passengers
Based on Dominant Carrier Share

| Period and City-Pair Density Based on O&D Passengers Per Day | Number of Dominant Carrier Passengers (000) | | | | | | Other Carrier's Passengers 1/ | Total |
|--|---|----------------|----------------|----------------|----------------|---------------|-------------------------------------|----------------|
| | 90% or More | 80 to 89.9% | 70 to 79.9% | 60 to 69.9% | 50 to 59.9% | Under 50% | | |
| Calendar 1988: | | | | | | | | |
| 50-100 | 2,330 | 1,768 | 1,191 | 1,480 | 1,502 | 3,705 | 9,036 | 21,011 |
| 101-200 | 3,226 | 2,197 | 2,332 | 1,725 | 2,314 | 4,266 | 11,429 | 27,485 |
| 201-500 | 3,236 | 3,405 | 4,351 | 4,726 | 4,926 | 7,082 | 20,007 | 47,733 |
| 500+ | 1,930 | 3,415 | 5,341 | 9,089 | 15,719 | 29,786 | 71,434 | 136,714 |
| Total | <u>10,722</u> | <u>10,784</u> | <u>13,215</u> | <u>17,020</u> | <u>24,461</u> | <u>44,839</u> | <u>111,908</u> | <u>232,948</u> |
| Calendar 1984: | | | | | | | | |
| 50-100 | 2,177 | 1,109 | 1,232 | 1,235 | 1,481 | 2,463 | 6,422 | 16,119 |
| 101-200 | 2,575 | 1,388 | 1,515 | 1,761 | 2,237 | 2,965 | 8,226 | 20,667 |
| 201-500 | 3,085 | 1,423 | 2,407 | 4,905 | 4,050 | 5,546 | 15,100 | 36,515 |
| 500+ | 1,194 | 2,741 | 2,715 | 12,237 | 13,385 | 23,949 | 57,760 | 113,982 |
| Total | <u>9,030</u> | <u>6,661</u> | <u>7,870</u> | <u>20,138</u> | <u>21,153</u> | <u>34,923</u> | <u>87,508</u> | <u>187,283</u> |
| Calendar 1979: | | | | | | | | |
| 50-100 | 3,125 | 2,180 | 1,790 | 1,452 | 1,442 | 1,316 | 4,956 | 16,262 |
| 101-200 | 4,756 | 3,092 | 2,533 | 2,085 | 2,146 | 1,925 | 7,113 | 23,650 |
| 201-500 | 3,438 | 3,276 | 4,217 | 4,772 | 4,486 | 3,311 | 12,741 | 36,240 |
| 500+ | 272 | 2,004 | 6,425 | 9,194 | 9,120 | 12,284 | 33,449 | 72,749 |
| Total | <u>11,590</u> | <u>10,552</u> | <u>14,965</u> | <u>17,503</u> | <u>17,194</u> | <u>18,837</u> | <u>58,260</u> | <u>148,902</u> |

1/ Total passengers of the non-dominant carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Percentage Distribution of True O&D Passengers
Based on Dominant Carrier Share

| Period and City-Pair Density Based on O&D Passengers Per Day | Number of Dominant Carrier Passengers (000) | | | | | | Other Carrier's Passengers 1/ | Tr |
|--|---|----------------|----------------|----------------|----------------|--------------|-------------------------------------|-----|
| | 90% or More | 80 to 89.9% | 70 to 79.9% | 60 to 69.9% | 50 to 59.9% | Under 50% | | |
| Calendar 1988: | | | | | | | | |
| 50-100 | 11.1% | 8.4% | 5.7% | 7.0% | 7.1% | 17.6% | 43.0% | 10X |
| 101-200 | 11.7 | 8.0 | 8.5 | 6.3 | 8.4 | 15.5 | 41.6 | 10X |
| 201-500 | 6.8 | 7.1 | 9.1 | 9.9 | 10.3 | 14.8 | 41.9 | 10X |
| 500+ | 1.4 | 2.5 | 3.9 | 6.6 | 11.5 | 21.8 | 52.3 | 10X |
| Total | 4.6 | 4.6 | 5.7 | 7.3 | 10.5 | 19.2 | 48.0 | 10X |
| Calendar 1984: | | | | | | | | |
| 50-100 | 13.5 | 6.9 | 7.6 | 7.7 | 9.2 | 15.3 | 39.8 | 10X |
| 101-200 | 12.5 | 6.7 | 7.3 | 8.5 | 10.8 | 14.3 | 39.8 | 10X |
| 201-500 | 8.4 | 3.9 | 6.6 | 13.4 | 11.1 | 15.2 | 41.4 | 10X |
| 500+ | 1.0 | 2.4 | 2.4 | 10.7 | 11.7 | 21.0 | 50.7 | 10X |
| Total | 4.8 | 3.6 | 4.2 | 10.8 | 11.3 | 18.6 | 46.7 | 10X |
| Calendar 1979: | | | | | | | | |
| 50-100 | 19.2 | 13.4 | 11.0 | 8.9 | 8.9 | 8.1 | 30.5 | 10X |
| 101-200 | 20.0 | 13.1 | 10.7 | 8.8 | 9.1 | 8.1 | 30.1 | 10X |
| 201-500 | 9.5 | 9.0 | 11.6 | 13.2 | 12.4 | 9.1 | 35.2 | 10X |
| 500+ | 0.4 | 2.8 | 8.8 | 12.6 | 12.5 | 16.9 | 46.0 | 10X |
| Total | 7.8 | 7.1 | 10.1 | 11.8 | 11.5 | 12.7 | 39.1 | 10X |

1/ Total passengers of the non-dominant carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

DISTRIBUTION OF ORIGIN-DESTINATION PASSENGERS AND PASSENGER-MILES
BY MARKET DENSITY AND ROUTING GROUP, 1979, 1984, AND Y.E.
SEPTEMBER 1988

Table I-34

Objective: Economic nonstop or single-plane transport by aircraft requires a minimum number of market passengers per day. On-line service requires a single carrier to serve both points, with a reasonable opportunity for passengers to utilize that single carrier's service. Absent single-plane or single-carrier service, multi-carrier service, or interline movement, must be utilized. The objective of this table is to show what the distribution of passengers and passenger-miles were in 1979, 1984, and Y.E. September 1988 by density and routing.

Data Source: Table 12 of the Origin-Destination Survey of Airline Passenger Traffic, which gives passenger routings by market -- single-plane, on-line, and interline.

Observations/Interpretation: Each density category of single-plane passenger movement has shown a decline in percentage of total passenger movement from 1979-1988, measured in terms of passengers or passenger-miles. On the other hand, interline passenger travel, the least appreciated by passengers, has virtually disappeared between 1979 and 1984, even in the markets under 50 passengers per day.

The reduction in single-plane and near disappearance of interline travel can be attributed to the marked increase in on-line passenger travel. This on-line increase is directly related to the increased scope (size) of carrier operations, nearly all carriers now serving national, as opposed to regional markets, and the rise of the hub/spoke system, which has enabled passengers to make generally convenient on-line connections in most passenger markets on any of the major carriers.

Distribution of Origin-Destination Passengers and
Passenger-Miles by Market Density and Routing Group,
1979, 1984, and Y.E. September 1988

| Year and Routing | Passenger Density per Day | | | | | Total |
|------------------------|---------------------------|--------------|--------------|--------------|--------------|--------------|
| | 0-50 | 51-100 | 101-200 | 201-500 | Over 500 | |
| <u>Passengers</u> | | | | | | |
| 1979 Single-Plane | 18.4 | 56.4 | 77.5 | 86.6 | 92.8 | 70.2 |
| On-Line | 37.6 | 31.9 | 15.8 | 9.2 | 4.0 | 16.2 |
| Interline | 44.0 | 11.7 | 6.7 | 4.2 | 3.2 | 13.5 |
| | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> | <u>99.9</u> |
| 1984 Single-Plane | 14.9 | 43.6 | 65.0 | 79.1 | 92.4 | 71.5 |
| On-Line | 60.7 | 50.2 | 30.9 | 17.9 | 5.8 | 22.2 |
| Interline | 24.4 | 6.2 | 4.1 | 2.9 | 1.8 | 6.2 |
| | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> | <u>99.9</u> | <u>100.0</u> | <u>99.9</u> |
| 1988 Single-Plane | 12.2 | 34.5 | 51.5 | 70.9 | 89.1 | 65.6 |
| On-Line | 80.8 | 62.3 | 46.0 | 27.2 | 9.5 | 31.8 |
| Interline | 7.0 | 2.8 | 2.5 | 1.9 | 1.4 | 2.6 |
| | <u>100.0</u> | <u>100.1</u> | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> |
| <u>Passenger-Miles</u> | | | | | | |
| 1979 Single-Plane | 10.8 | 43.9 | 68.0 | 80.8 | 88.9 | 63.5 |
| On-Line | 41.6 | 41.8 | 23.1 | 13.5 | 6.1 | 20.5 |
| Interline | 47.7 | 14.2 | 8.9 | 5.7 | 4.9 | 16.0 |
| | <u>100.1</u> | <u>99.9</u> | <u>100.0</u> | <u>100.0</u> | <u>99.9</u> | <u>100.0</u> |
| 1984 Single-Plane | 8.3 | 29.6 | 52.1 | 69.7 | 85.7 | 60.7 |
| On-Line | 66.6 | 62.6 | 42.4 | 26.4 | 11.3 | 31.4 |
| Interline | 25.0 | 7.8 | 5.4 | 3.8 | 3.1 | 7.9 |
| | <u>99.9</u> | <u>100.2</u> | <u>99.9</u> | <u>99.9</u> | <u>100.1</u> | <u>100.0</u> |
| 1988 Single-Plane | 6.2 | 20.2 | 36.3 | 58.6 | 81.1 | 54.1 |
| On-Line | 86.1 | 76.5 | 60.7 | 39.0 | 16.9 | 42.6 |
| Interline | 7.7 | 3.3 | 3.0 | 2.4 | 2.0 | 3.3 |
| | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> | <u>100.0</u> |

SOURCE: Origin-Destination Survey of Airline Passenger Traffic, Table 12.
Data rounded to nearest tenth.

PERCENTAGE DISTRIBUTION OF TOTAL ORIGIN-DESTINATION PASSENGERS AND
PASSENGER-MILES BY MARKET DENSITY AND ROUTING, 1979, 1984, AND
Y.E. SEPTEMBER 1988

Table I-35

Objective: As in the preceding Table I-30, the comparison of the movement of passengers and the associated passenger-miles by service enables us to judge what service changes have occurred. It does not tell us what the distribution of passengers is in total. This table is designed to show the overall percentage distribution of passengers and passenger-miles.

Data Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10

Observations/Interpretation: In 1979 about 70 percent of all passengers travelled single-plane, with about 35 percent of the single-plane passengers in the very densest markets. Single-plane passengers now account for about 65 percent of all passengers, with about 40 percent of all passengers in the densest market interval. On-line passengers, other than single-plane, now account for about one-third of all passengers, about double the 1979 level, and interline passengers only about 3 percent, down from 1979's 13.5 percent.

On-line passengers have increased since 1984, again a reflection of the hub/spoke system generally adopted by carriers in the mid-eighties. The increase in on-line travel in the 1984-1988 period was at the expense of single-plane travel (which was down about 5 percentage points) and interline travel (down about 4 percentage points.)

Passenger-mile distributions are similar, with, however, a slightly lower percentage of passenger-miles in the upper density ranges. This is due to the distribution of passengers by distance interval, since the densest passenger markets are closer than 500 miles. Both the distribution of passengers by service routing and distance, and passengers by service routing and density are presented in graphic form below.

Percentage Distribution of Total Origin-Destination Passengers
and Passenger-Miles by Market Density and Routing, 1979, 1984, and
Y.E. September 1988

| <u>Year and Routing</u> | <u>Passenger Density per Day</u> | | | | | <u>Total</u> |
|-------------------------|----------------------------------|--------------------|---------------------|---------------------|---------------------|--------------|
| | <u>0-50</u> | <u>51- 100</u> | <u>101- 200</u> | <u>201- 500</u> | <u>Over 500</u> | |
| <u>Passengers</u> | | | | | | |
| 1979 Single-Plane | 4.0 | 4.8 | 9.6 | 16.8 | 35.0 | 70.2 |
| On-Line | 8.3 | 2.7 | 2.0 | 1.8 | 1.5 | 16.2 |
| Interline | 9.7 | 1.0 | 0.8 | 0.8 | 1.2 | 13.5 |
| Total | 22.0 | 8.5 | 12.4 | 19.4 | 37.7 | 100.0 |
| 1984 Single-Plane | 2.4 | 3.1 | 6.0 | 12.9 | 47.0 | 71.5 |
| On-Line | 9.9 | 3.6 | 2.9 | 2.9 | 2.9 | 22.2 |
| Interline | 4.0 | 0.4 | 0.4 | 0.5 | 0.9 | 6.2 |
| Total | 16.4 | 7.1 | 9.3 | 16.3 | 50.9 | 100.0 |
| 1988 Single-Plane | 2.0 | 2.6 | 5.2 | 12.4 | 43.4 | 65.6 |
| On-Line | 13.2 | 4.7 | 4.6 | 4.7 | 4.6 | 31.8 |
| Interline | 1.1 | 0.2 | 0.2 | 0.3 | 0.7 | 2.6 |
| Total | 16.3 | 7.5 | 10.0 | 17.5 | 48.7 | 100.0 |
| <u>Passenger-Miles</u> | | | | | | |
| 1979 Single-Plane | 2.5 | 3.7 | 7.7 | 14.7 | 35.0 | 63.5 |
| On-Line | 9.5 | 3.5 | 2.6 | 2.5 | 2.4 | 20.5 |
| Interline | 10.9 | 1.2 | 1.0 | 1.0 | 1.9 | 16.0 |
| Total | 22.8 | 8.4 | 11.3 | 18.2 | 39.3 | 100.0 |
| 1984 Single-Plane | 1.6 | 2.4 | 5.0 | 11.8 | 40.0 | 60.7 |
| On-Line | 12.4 | 5.1 | 4.1 | 4.5 | 5.3 | 31.4 |
| Interline | 4.7 | 0.6 | 0.5 | 0.6 | 1.4 | 7.9 |
| Total | 18.7 | 8.2 | 9.6 | 16.9 | 46.7 | 100.0 |
| 1988 Single-Plane | 1.0 | 1.6 | 3.8 | 10.8 | 36.8 | 54.1 |
| On-Line | 15.2 | 6.2 | 6.4 | 7.2 | 7.7 | 42.6 |
| Interline | 1.4 | 0.3 | 0.3 | 0.4 | 0.9 | 3.3 |
| Total | 17.6 | 8.0 | 10.5 | 18.4 | 45.4 | 100.0 |

SOURCE: Appendices E and F. Data rounded to nearest tenth.

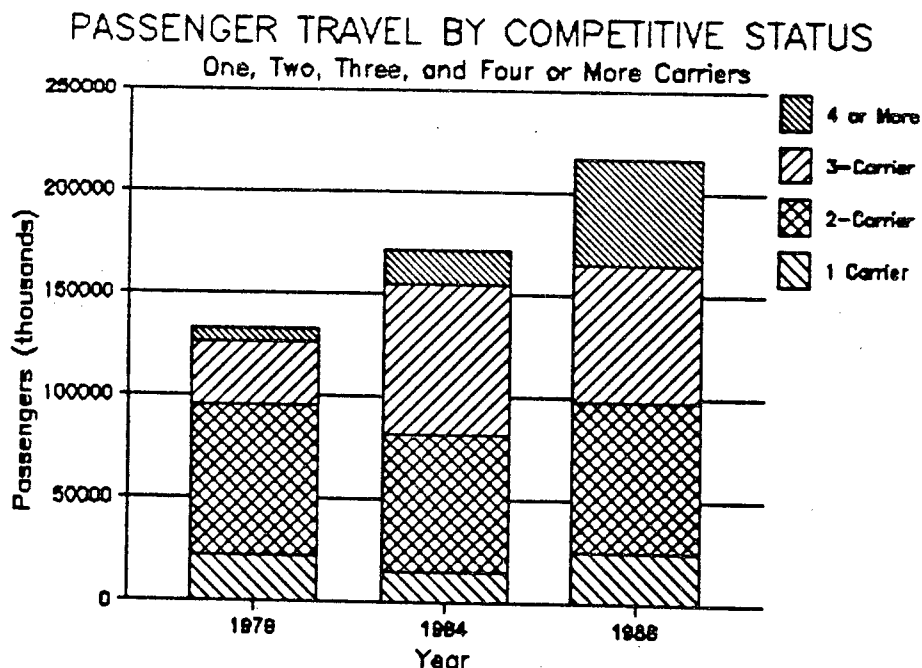
DISTRIBUTION OF ORIGIN-DESTINATION PASSENGERS
BY COMPETITIVE CATEGORY AND DISTANCE, 1979,
1984, AND Y.E. SEPTEMBER 1988

Table I-36

Objective: This table was developed to analyze the change in passenger distribution by mileage interval and competitive status.

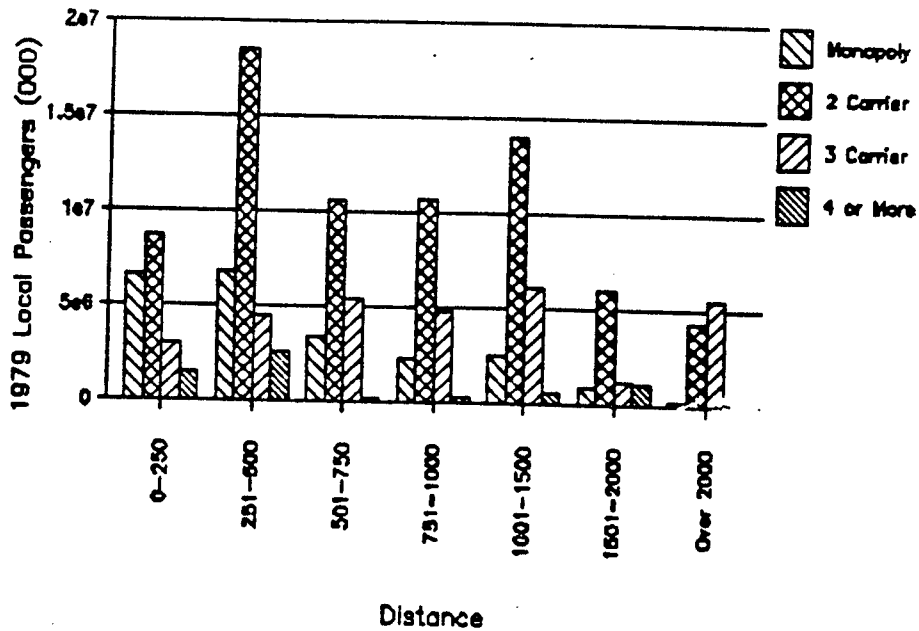
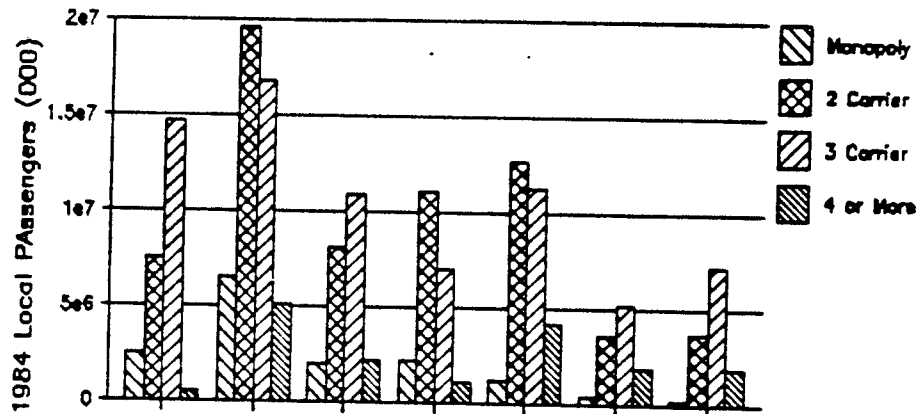
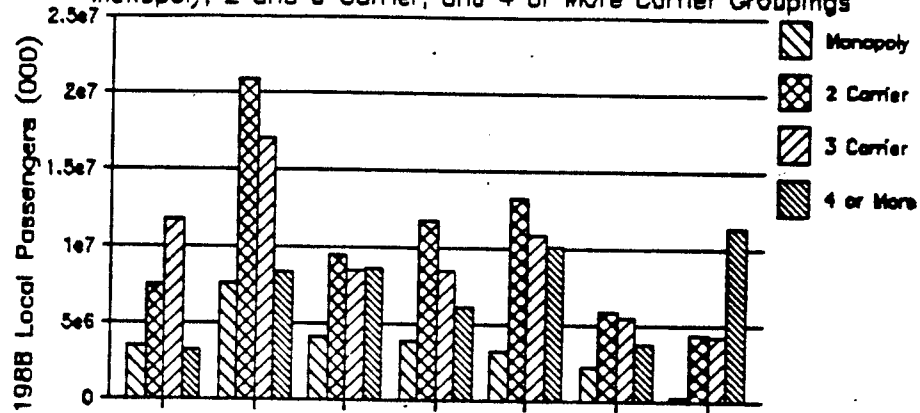
Data Source/Assumptions: Data source was the Origin-Destination Survey of Airline Passenger Traffic, Table 10, Local. Competitive carriers were those with an on-line market share of 10 percent.

Observation/Interpretations: Examining the Total column indicates that single-carrier (monopoly) service has declined from 1979 to 1988 as a percentage, as has 2 carrier service. Three and more than three carrier market passengers account for 54.7 percent of all passengers in 1988, but 27.8 percent in 1979 and 52.6 percent in 1984. All data groups show a general shift downward (more competitive service) and to the right (more passengers are in the denser markets, proportionally).



LOCAL PASSENGERS BY COMPETITIVE STATUS

Monopoly, 2 and 3 Carrier, and 4 or More Carrier Groupings



Distribution of Origin-Destination Passengers
by Competitive Status and Distance, 1979, 1984,
and Y.E. September 1988

| | Distance Interval | | | | | | |
|---------------------|-------------------|-------------|-------------|---------------|-----------------|-----------------|---------------|
| | 0- 250 | 251- 500 | 501- 750 | 751- 1,000 | 1,001- 1,500 | 1,501- 2,000 | Over 2,000 |
| 1979 Single Carrier | | | | | | | |
| 2 Carriers | 5.0 | 5.1 | 2.6 | 1.8 | 1.9 | 0.7 | 0.2 |
| 3 Carriers | 6.5 | 14.0 | 8.0 | 8.1 | 10.5 | 4.5 | 3.2 |
| Over 3 Carriers | 2.2 | 3.4 | 4.1 | 3.6 | 4.6 | 0.8 | 4.2 |
| Total | 14.8 | 24.5 | 14.8 | 13.7 | 17.4 | 6.9 | 7.7 |
| 1984 Single Carrier | | | | | | | |
| 2 Carriers | 1.5 | 3.8 | 1.1 | 1.3 | 0.7 | 0.3 | 0.1 |
| 3 Carriers | 4.4 | 11.4 | 4.7 | 6.5 | 7.4 | 2.1 | 2.2 |
| Over 3 Carriers | 8.6 | 9.8 | 6.3 | 4.1 | 6.6 | 3.0 | 4.2 |
| Total | 14.8 | 28.0 | 13.4 | 12.6 | 17.2 | 6.5 | 7.6 |
| 1988 Single Carrier | | | | | | | |
| 2 Carriers | 1.6 | 3.5 | 1.9 | 1.8 | 1.5 | 1.1 | 0.1 |
| 3 Carriers | 3.4 | 9.6 | 4.4 | 5.4 | 6.1 | 2.7 | 2.1 |
| Over 3 Carriers | 5.4 | 7.9 | 3.9 | 3.9 | 5.0 | 2.5 | 2.0 |
| Total | 11.9 | 24.9 | 14.2 | 13.9 | 17.3 | 8.1 | 9.5 |

Source: Origin-Destination Survey of Airline Passenger Traffic,
Table 10, Local.

Note: Percentages rounded to nearest tenth.

DISTRIBUTION OF ORIGIN DESTINATION PASSENGERS
BY COMPETITIVE CATEGORY AND DENSITY, 1979, 1984, AND
Y.E. SEPTEMBER 1988

Table I-37

Objective: This analysis seeks to determine the change in competitive status by market size (density).

Data Sources: The data source was the Origin-Destination Survey of Airline Passenger Traffic, Table 10, Local Passengers. Passenger markets with under 50 passengers per day were excluded. A "competitive carrier" was a carrier with at least a 10 percent share of the local passenger market.

Observations/Interpretations: Comparing the "Total" columns for the three years shows that passenger distribution in markets with three or more carriers rose from 4.8 percent of the total in 1979 to 24.0 percent in 1988. The three-carrier market passenger distribution rose to 42.6 percent in 1984 and declined to 30.7 percent in 1988. The single-carrier passenger percentage dropped markedly 1979-1984 and rose slightly, to 11.6 percent in 1988.

By density interval, all 1984 single carrier percentages decline from 1979, and increase in 1988, except the lowest density interval. Declines in both periods generally continue in two carrier markets, with three carrier market percentages up slightly.

The distributions in all three periods are heavily influenced by passengers in the very densest markets. Comparing passengers in the next lowest interval, 201-500 passengers per day, shows that the single-carrier portion, in that density interval, has increased slightly, but that the increases in 3, and 4 or more carrier market passengers have caused the 2 carrier market passenger percentage to fall substantially.

Competitive Carrier Percentage in
the 201-500 Passenger per Day Interval

| | <u>1979</u> | <u>1988</u> |
|-----------------|-------------|-------------|
| Single Carrier | 14.3 | 17.5 |
| 2-Carrier | 67.2 | 46.3 |
| 3 Carrier | 16.1 | 21.9 |
| Over 3 Carriers | <u>2.3</u> | <u>14.2</u> |
| Total | 99.9 | 99.9 |

Distribution of Origin-Destination Passengers
by Competitive Status and Density, 1979, 1984,
and Y.E. September 1988

| <u>Year and Routing</u> | | <u>Passenger Density Per Day</u> | | | | <u>Total</u> |
|-------------------------|-----------------|----------------------------------|---------------------|---------------------|---------------------|--------------|
| | | <u>51- 100</u> | <u>101- 200</u> | <u>201- 500</u> | <u>Over 500</u> | |
| 1979 | Single Carrier | 4.6 | 5.7 | 3.7 | 3.3 | 17.3 |
| | 2 Carriers | 4.1 | 7.3 | 17.2 | 26.2 | 54.8 |
| | 3 Carriers | 1.2 | 2.7 | 4.1 | 15.0 | 23.0 |
| | Over 3 Carriers | 0.2 | 0.1 | 0.6 | 3.9 | 4.8 |
| | Total | <u>10.1</u> | <u>15.9</u> | <u>25.6</u> | <u>48.3</u> | <u>99.9</u> |
| 1984 | Single Carrier | 1.9 | 2.6 | 2.8 | 1.5 | 8.8 |
| | 2 Carriers | 2.7 | 4.5 | 8.7 | 22.7 | 38.6 |
| | 3 Carriers | 2.4 | 3.0 | 6.3 | 30.9 | 42.6 |
| | Over 3 Carriers | 1.3 | 1.0 | 1.8 | 5.9 | 10.0 |
| | Total | <u>8.3</u> | <u>11.1</u> | <u>19.6</u> | <u>61.0</u> | <u>100.0</u> |
| 1988 | Single Carrier | 1.7 | 2.7 | 3.7 | 3.5 | 11.6 |
| | 2 Carriers | 2.1 | 3.4 | 9.7 | 18.6 | 33.8 |
| | 3 Carriers | 3.1 | 2.9 | 4.6 | 20.1 | 30.7 |
| | Over 3 Carriers | 2.1 | 2.7 | 3.0 | 16.2 | 24.0 |
| | Total | <u>8.9</u> | <u>11.7</u> | <u>21.0</u> | <u>58.4</u> | <u>100.1</u> |

SOURCE: Origin-Destination Survey of Airline Passenger Traffic,
Table 10, Local.

NOTE: Percentages rounded to nearest tenth.

DISTRIBUTION OF TRANSPORTED ORIGIN-DESTINATION PASSENGERS
BY COMPETITIVE STATUS AND DISTANCE, Y.E. SEPTEMBER 1988

Table I-38

Objective: This table was designed to test whether distribution of total passengers, local plus interline connecting, is any different than that of local market passengers alone.

Data Source: The data source is the Origin-Destination Survey of Airline Passenger Traffic, Table 10, Local plus Connecting Passengers, Y.E. September 1988.

Conclusions: Using total passengers, as opposed to local passengers, in the market and competitive analysis changes the distribution of passengers only marginally in any of the sub-groupings. The only particular data of interest is the increase in the ratio of transported to local passengers in the 0-250 mile range, an indication that very short stage lengths tend to have a significantly higher proportion of connecting passengers.

Distribution of Transported Origin-Destination Passengers
by Competitive Status and Distance, Y.E. September 1988

| | Distance Interval | | | | | | Total |
|--------------------|-------------------|-------------|-------------|---------------|-----------------|-----------------|---------------|
| | 0- 250 | 251- 500 | 501- 750 | 751- 1,000 | 1,001- 1,500 | 1,501- 2,000 | Over 2,000 |
| Single Carrier | 1.8 | 3.5 | 1.9 | 1.9 | 1.6 | 1.0 | 0.1 |
| 2 Carriers | 4.1 | 9.8 | 4.5 | 5.2 | 5.9 | 2.8 | 2.0 |
| 3 Carriers | 5.5 | 7.7 | 3.9 | 4.1 | 4.8 | 2.5 | 2.0 |
| Over 3 Carriers | 1.5 | 3.8 | 4.0 | 2.7 | 4.5 | 1.8 | 5.1 |
| Total | 12.9 | 24.8 | 14.3 | 13.9 | 16.8 | 8.0 | 9.2 |
| Total Passengers | 29,331 | 57,138 | 32,786 | 31,863 | 38,735 | 18,465 | 21,214 |
| Local Passengers | 26,057 | 54,004 | 30,894 | 30,281 | 37,532 | 17,483 | 20,437 |
| Ratio: Total/Local | 1.126 | 1.058 | 1.061 | 1.052 | 1.032 | 1.056 | 1.038 |
| | | | | | | | 1.061 |
| | | | | | | | 229,933 |
| | | | | | | | 216,689 |

Source: Origin-Destination Survey of Airline Passenger Traffic,

Table 10, Local and Total.

Note: Percentages rounded to nearest tenth, passengers in thousands.

CHANGES IN THE HERFINDAHL-HIRSCHMAN INDEXES FOR
THE TOP 1,000 1988 MARKETS

Tables I-39 and I-40

Objective: These tables were designed to show the changes in the Herfindahl-Hirschman (HHI) indexes for the top 1,000 markets based on 1988 data over the 1979-1988 and 1984-1988 periods. As explained below, increases in the HHI indicate increased market concentration and decreases indicate a lessening of market concentration.

Data Source: Origin-Destination Survey of Airline Passenger Airline Passenger Traffic, Table 10.

Observations/Interpretation: The Herfindahl-Hirschman Index (HHI) is used as measure of market concentration. The index for any market is calculated by summing the squares of the percentage market shares of each participating carrier. For example, if in a given market in a given year American Airlines has a 45 percent share of enplanements, Trans World Airlines has a 35 percent share and United Airlines has a 20 percent share, the HHI would be:

$$(45)^2 + (35)^2 + (20)^2 =$$

$$2,025 + 1,225 + 400 = 3,650$$

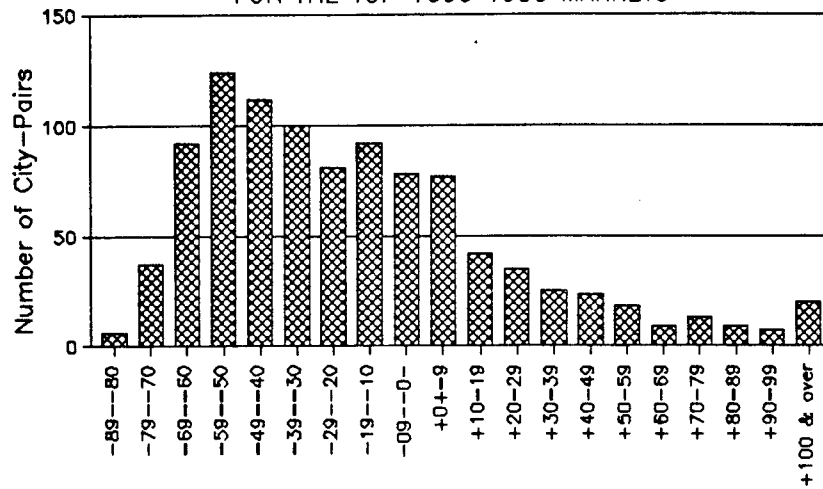
Tables I-35 and I-36 compares the changes in these indexes in the top 1,000 markets based on calendar year 1988 data.

Under the Justice Department standards an HHI below 1,000 indicates low concentration, between 1,000 and 1,800 moderate concentration and above 1,800, high concentration. These standards, however, have been developed for markets of national scope and are not strictly appropriate for airline city-pair markets. Airline markets only rarely have more than four competitors and tend to have HHIs exceeding 2,000.

The distribution of the percentage changes in HHI between 1979 and 1988, shown in Table I-35 and the following chart, indicates that 722 of the 1,000 markets (72.2 percent) had decreases in the HHI. For these markets the reduction in the HHI would indicate a lessening of market concentration. For the remaining 278 markets (27.8 percent of the total) the HHI showed an increase between 1979 and 1988, indicating an increase in market concentration.

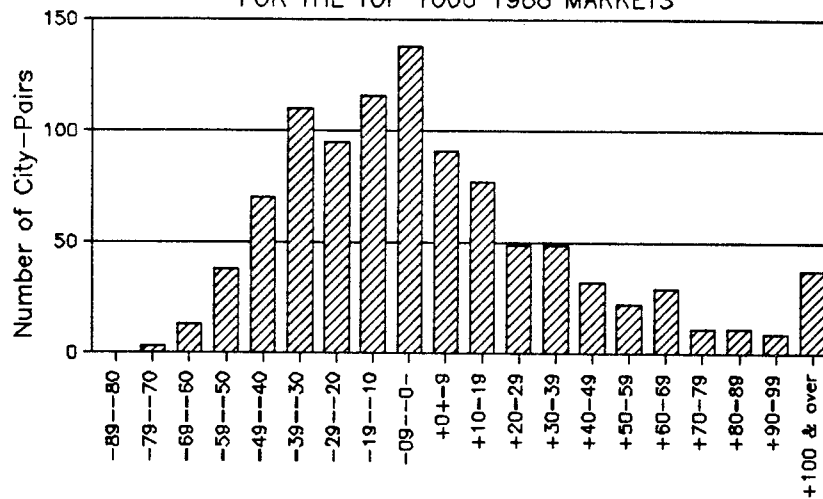
The distribution of the percentage changes in the HHI between 1984 and 1988, shown in Table I-36 and the following chart, indicates that 583 of the 1,000 markets (58.3 percent) had decreases in the HHI. For these markets the reduction in the HHI would indicate a lessening of market concentration. For the remaining 417 markets (41.7 percent) the HHI showed an increase between 1984 and 1988, indicating an increase in market concentration.

CHANGE IN HHI INDEX FROM 1979 - 1988 FOR THE TOP 1000 1988 MARKETS



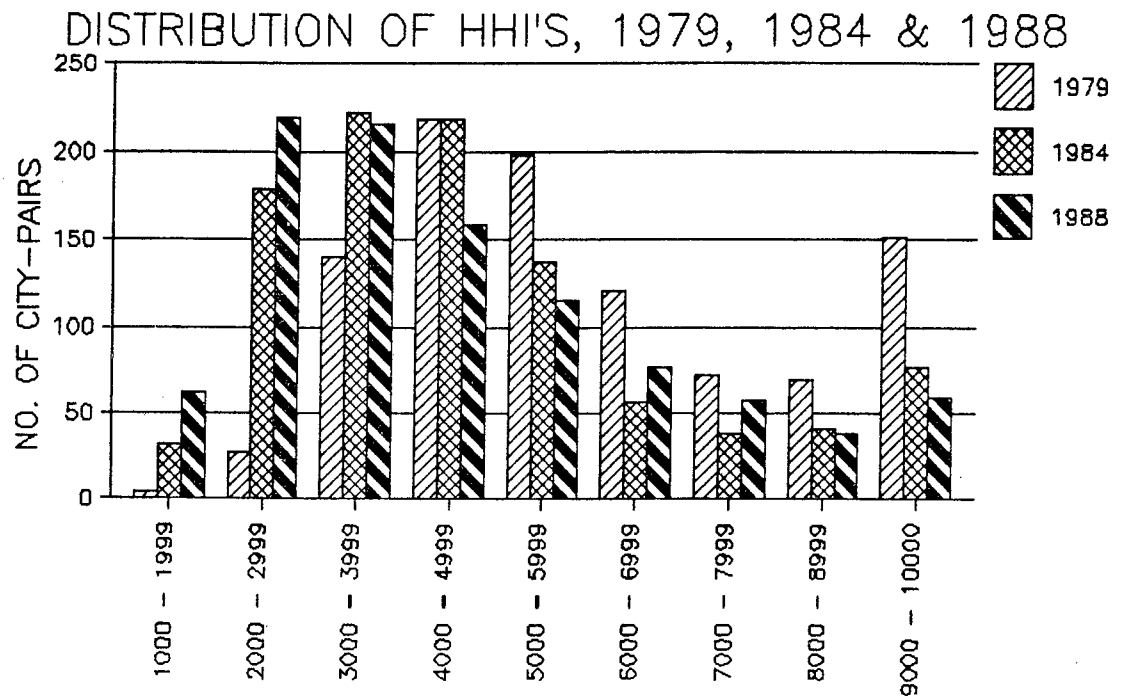
Percent Change In Market HHI

CHANGE IN HHI INDEX FROM 1984 - 1988 FOR THE TOP 1000 1988 MARKETS



Percent Change In Market HHI

The chart below shows the distribution of the HHIs for the years 1979, 1984 and 1988. The two lowest intervals, 1000 to 1999 and 2000 to 2999, show successive increases from 1979 to 1988. The two highest intervals, 8000 to 8999 and 9000 and 10000, show successive declines. In all intervals from 4000 and up the number of markets in 1988 is below the number in 1979, indicating a decrease in concentration in the top 1,000 markets.



HERFINDAHL - HIRSCHMAN INDEX

The top 1,000 markets based on O&D passenger totals for calendar year 1988 accounted for 72 percent of total O&D passengers.

The detailed listing of the HHIs for 1979, 1984 and 1988 is shown in Appendix S. Users are cautioned that the 3-letter code for multi-airport cities may be any of the valid three-letter codes for the city. Most frequently it will be the lowest code in alphabetical order, e.g., CGX for Chicago rather than ORD, or EWR for New York/Newark rather than JFK or LGA.

CHANGES IN THE HERFINDAHL-HIRSCHMAN INDEXES,
TOP 1,000 1988 MARKETS, 1979-1988

| <u>Percent Change in HHI, 1979-1988</u> | <u>Number of Markets</u> | <u>Percent of Markets</u> | |
|---|------------------------------|---------------------------|-------------------|
| | | <u>Simple</u> | <u>Cumulative</u> |
| -89 to -80 | 6 | 0.6 | 0.6 |
| -79 to -70 | 37 | 3.7 | 4.3 |
| -69 to -60 | 92 | 9.2 | 13.5 |
| -59 to -50 | 124 | 12.4 | 25.9 |
| -49 to -40 | 112 | 11.2 | 37.1 |
| -39 to -30 | 100 | 10.0 | 47.1 |
| -29 to -20 | 81 | 8.1 | 55.2 |
| -19 to -10 | 92 | 9.2 | 64.4 |
| - 9 to -.001 | 78 | 7.8 | 72.2 |
| 0 to 9 | 77 | 7.7 | 79.9 |
| 10 to 19 | 42 | 4.2 | 84.1 |
| 20 to 29 | 35 | 3.5 | 87.6 |
| 30 to 39 | 25 | 2.5 | 90.1 |
| 40 to 49 | 23 | 2.3 | 92.4 |
| 50 to 59 | 18 | 1.8 | 94.2 |
| 60 to 69 | 9 | 0.9 | 95.1 |
| 70 to 79 | 13 | 1.3 | 96.4 |
| 80 to 89 | 9 | 0.9 | 97.3 |
| 90 to 99 | 7 | 0.7 | 98.0 |
| 100 and over | 20 | 2.0 | 100.0 |
| Total | 1,000 | 100.0 | -- |

Source: Origin-Destination Survey of Airline Passenger Traffic - Domestic.

CHANGES IN THE HERFINDAHL-HIRSCHMAN INDEXES,
TOP 1,000 1988 MARKETS, 1984-1988

| <u>Percent Change in HHI, 1984-1988</u> | <u>Number of Markets</u> | <u>Percent of Markets</u> | |
|---|------------------------------|---------------------------|-------------------|
| | | <u>Simple</u> | <u>Cumulative</u> |
| -79 to -70 | 3 | 0.3 | 0.3 |
| -69 to -60 | 13 | 1.3 | 1.6 |
| -59 to -50 | 38 | 3.8 | 5.4 |
| -49 to -40 | 70 | 7.0 | 12.4 |
| -39 to -30 | 110 | 11.0 | 23.4 |
| -29 to -20 | 95 | 9.5 | 32.9 |
| -19 to -10 | 116 | 11.6 | 44.5 |
| - 9 to -.001 | 138 | 13.8 | 58.3 |
| 0 to 9 | 91 | 9.1 | 67.4 |
| 10 to 19 | 77 | 7.7 | 75.1 |
| 20 to 29 | 49 | 4.9 | 80.0 |
| 30 to 39 | 49 | 4.9 | 84.9 |
| 40 to 49 | 32 | 3.2 | 88.1 |
| 50 to 59 | 22 | 2.2 | 90.3 |
| 60 to 69 | 29 | 2.9 | 93.2 |
| 70 to 79 | 11 | 1.1 | 94.3 |
| 80 to 89 | 11 | 1.1 | 95.4 |
| 90 to 99 | 9 | 0.9 | 96.3 |
| 100 and over | 37 | 3.7 | 100.0 |
| Total | 1,000 | 100.0 | -- |

Source: Origin-Destination Survey of Airline Passenger Traffic - Domestic.

CHANGES IN THE HERFINDAHL-HIRSCHMAN INDEXES FOR THE
EIGHT HIGHLY CONCENTRATED HUBS, 1979-1988 AND 1984-1988

Table I-41

Objective: Changes in the Herfindahl-Hirschman indexes for markets involving the highly concentrated hubs which were included in the top 1,000 markets used for Tables I-35 and I-36 were summarized to determine if these markets tended to show more or less concentration between 1979 and 1988 and between 1984 and 1988.

Data Source: Origin-Destination Survey of Airline Passenger Traffic, Table 10

Observations/Interpretation:

The eight highly concentrated hubs had varying numbers of city-pair markets included in the top 1,000 markets analysis, ranging from 10 markets for Dayton to 40 markets for Minneapolis/St. Paul and St. Louis.

In the 1979-1988 comparison, 5 of the 8 hubs had more decreases in market HHIs than increases: Dayton, Salt Lake City, Cincinnati, St. Louis, and Pittsburgh. The three hubs which had more increases than decreases were Minneapolis/St. Paul, Memphis and Charlotte. The results are shown below:

| <u>Hub</u> | <u>City-Pairs in Top 1,000</u> | <u>Change in HHI</u> | |
|----------------------|--------------------------------|-------------------------|-------------------------|
| | | <u>Percent Negative</u> | <u>Percent Positive</u> |
| Dayton | 10 | 60% | 40% |
| Salt Lake City | 23 | 57 | 43 |
| Cincinnati | 22 | 55 | 45 |
| St. Louis | 40 | 55 | 45 |
| Pittsburgh | 27 | 52 | 48 |
| Minneapolis/St. Paul | 40 | 45 | 55 |
| Memphis | 14 | 43 | 57 |
| Charlotte | 18 | 33 | 67 |

By these measures the HHI indexes would indicate that the largest markets of 5 hubs were less concentrated in 1988 than in 1979 and 3 were more concentrated.

In the 1984-1988 comparison, 3 of the 8 hubs had more decreases in market HHIs than increases and 5 had more increases. Pittsburgh, Cincinnati and Salt Lake City had more decreases, indicating less concentration. St. Louis, Charlotte, Dayton, Memphis and Minneapolis/St. Paul had more increases, indicating greater concentration. The results are shown below:

| <u>Hub</u> | <u>City-Pairs in Top 1,000</u> | <u>Change in HHI</u> | |
|----------------------|--------------------------------|-------------------------|-------------------------|
| | | <u>Percent Negative</u> | <u>Percent Positive</u> |
| Pittsburgh | 27 | 67% | 33% |
| Cincinnati | 22 | 64 | 36 |
| Salt Lake City | 23 | 52 | 48 |
| St. Louis | 40 | 40 | 60 |
| Charlotte | 18 | 33 | 67 |
| Dayton | 10 | 30 | 70 |
| Memphis | 14 | 21 | 79 |
| Minneapolis/St. Paul | 40 | 20 | 80 |

CHANGES IN THE HERFINDAHL-HIRSCHMAN INDEXES FOR
EIGHT HIGHLY CONCENTRATED HUBS, 1979-1988 AND 1984-1988

| <u>Hub</u> | <u>No. of City-Pairs</u> | <u>Change in HHI</u> | | | | <u>Percent Distribution</u> | | | |
|----------------------|------------------------------|----------------------|-------------|------------------|-------------|-----------------------------|-------------|----------------|-------------|
| | | <u>1979-1988</u> | | <u>1984-1988</u> | | <u>1979-1988</u> | | <u>1984-19</u> | |
| | | <u>Neg.</u> | <u>Pos.</u> | <u>Neg.</u> | <u>Pos.</u> | <u>Neg.</u> | <u>Pos.</u> | <u>Neg.</u> | <u>Pos.</u> |
| Charlotte | 18 | 6 | 12 | 6 | 12 | 33% | 67% | 33% | 67 |
| Cincinnati | 22 | 12 | 10 | 14 | 8 | 55 | 45 | 64 | 36 |
| Dayton | 10 | 6 | 4 | 3 | 7 | 60 | 40 | 30 | 70 |
| Memphis | 14 | 6 | 8 | 3 | 11 | 43 | 57 | 21 | 79 |
| Minneapolis/St. Paul | 40 | 18 | 22 | 8 | 32 | 45 | 55 | 20 | 80 |
| Pittsburgh | 27 | 14 | 13 | 18 | 9 | 52 | 48 | 67 | 33 |
| St. Louis | 40 | 22 | 18 | 16 | 24 | 55 | 45 | 40 | 60 |
| Salt Lake City | 23 | 13 | 10 | 12 | 11 | 57 | 43 | 52 | 48 |
| Total* | 194 | 97 | 97 | 80 | 114 | 50 | 50 | 41 | 59 |

* Includes duplications.

Source: Origin-Destination Survey of Airline Passenger Traffic - Domestic.

SERVICE TO LARGE AND MEDIUM HUBS FROM
SMALL COMMUNITIES, SEPTEMBER 1989

Table I-42

Objective: To show the number of large and medium hubs served from small communities and to determine if there is a relationship between traffic levels and the number of hubs served.

Data Source: Appendix B and the September 15, 1989 Official Airline Guide

Observations/Interpretation: Service to 269 points which enplaned between 1,000 and 100,000 passengers in calendar year 1988 (Appendix B) was checked to determine how many large and medium hubs were served from each point. Satellite airports were excluded and a minimum level of 10 departures (2 per day, 5 days per week) was required to be counted as hub service. The results of the analysis are shown in Table I-38.

Eleven of the 269 small communities received service to 4 or more hubs, but none of these enplaned fewer than 25,000 passengers. Since this represents only 4 percent of the 269 communities analyzed, it can be seen that this is a fairly rare level of service which is only provided to points near clustered hubs such as Washington, Baltimore, Philadelphia, and New York. Three-hub service was received by 34 small communities or 13 percent of the total. Here again most enplaned 25,000 or more passengers -- only 6 were below that level. Two-hub service was received by small communities at all levels of enplanements, but it was relatively rare at points under 10,000 enplanements. Seventy-five (28 percent) of the 269 communities received two-hub service. Single hub service was received by 125 small communities (46 percent). This represents the norm for communities enplaning under 15,000 passengers per year. Finally, 14 small communities did not receive service to a large or medium hub. These points were tied into small hubs or other nonhubs. Ten of the small communities served in 1988 received no air service in September 1989.

Based on this analysis, the minimum traffic levels associated with various levels of hub service are:

| <u>Number of Hubs Served</u> | <u>Minimum Annual Enplanements</u> |
|------------------------------|------------------------------------|
| 1 | 1,000 |
| 2 | 10,000 |
| 3 | 25,000 |
| 4 or more | 50,000 |

These levels are merely approximations, not hard and fast rules, since some of the smallest traffic generators receive two-hub service.

SERVICE TO LARGE AND MEDIUM HUBS FROM SMALL COMMUNITIES, SEPTEMBER 1989

| 1988 Enplanements 1/ | No. of Large & Medium Hubs Served | | | | | Total | Percent of Total 2/ | | | | Not Served | | Total |
|----------------------|-----------------------------------|-----|----|----|-----------|-------|---------------------|----|-----|-----|------------|--------|-------|
| | 0 | 1 | 2 | 3 | 4 or more | | 0 | 1 | 2 | 3 | 4 or more | Served | |
| 50,000 to 99,999 | 0 | 4 | 19 | 12 | 9 | 44 | 0 | 9% | 43% | 27% | 21% | 0 | 100 |
| 25,000 to 49,999 | 0 | 22 | 13 | 16 | 2 | 53 | 0 | 42 | 24 | 30 | 4 | 0 | 100 |
| 20,000 to 24,999 | 1 | 11 | 9 | 0 | 0 | 22 | 4 | 50 | 41 | 0 | 0 | 5 | 100 |
| 15,000 to 19,999 | 2 | 4 | 10 | 3 | 0 | 19 | 10 | 21 | 53 | 16 | 0 | 0 | 100 |
| 10,000 to 14,999 | 0 | 21 | 9 | 3 | 0 | 33 | 0 | 64 | 27 | 9 | 0 | 0 | 100 |
| 5,000 to 9,999 | 4 | 10 | 4 | 0 | 0 | 20 | 20 | 50 | 20 | 0 | 0 | 10 | 100 |
| 2,500 to 4,999 | 0 | 28 | 4 | 0 | 0 | 33 | 0 | 85 | 12 | 0 | 0 | 3 | 100 |
| 1,000 to 2,499 | 7 | 25 | 7 | 0 | 0 | 45 | 16 | 56 | 16 | 0 | 0 | 13 | 100 |
| Total | 14 | 125 | 75 | 34 | 11 | 269 | 5 | 46 | 28 | 13 | 4 | 4 | 100 |

1/ Total enplanements, certificated carrier plus commuter carriers. See Appendix B.

2/ Percentages may not add to 100 due to rounding.

Source: Appendix B and Official Airline Guide, September 15, 1989.

PART II

HUB-AND-SPOKE-SERVICE

PART II
HUB-AND-SPOKE SERVICE

Our discussion of the hub-and-spoke system of operation includes various comparisons with the linear system of operation. These comparisons are useful in understanding how hubbing works, and, more importantly, to demonstrate that hubbing is in fact a superior system for moving passengers.

Hubbing is an operational system whereby flights from numerous points arrive at and then depart from a common point within a short time frame so that passengers arriving from any given point can connect to flights departing to all other points. Put another way, feed traffic from spoke points is collected at hubs and then consolidated on flights going to destinations that are common to one or more points. In a linear operational system, by contrast, a carrier provides service by crisscrossing flights between the cities in its system with many flights involving stops at one or more intermediate points.

Under either a linear system of operation or a hubbing system, city-pair markets with larger traffic volumes receive single-plane service. Other cities receive quite different service under each operational system, however. In the hubbing system, smaller city-pairs will tend to be served primarily through connections at a hub complex. In the linear system, even smaller points will continue to receive varying degrees of single-plane service.

There will be a strong relationship between the traffic generating ability of a point and the number of linear flights it is made a part of. For example, a non-hub city may be an intermediate point on 10 flights between five larger city-pair markets whereas a small-hub city may be an intermediate point on 40 flights between a greater number of larger city-pair markets. In either case, however, these cities will have direct service to only a limited number of other points and, therefore, continue to rely on connecting service to reach other destinations.

Perhaps the most meaningful distinction between a linear and hubbing system of operations is that flights tend to be more channeled in the latter. While both linear and hubbing systems rely on a mixture of single-plane and connecting services, the former is a more spread-out system of flights with greater emphasis on a mixture of single-plane and connecting flights compared with a much more focused type of service in the hub-and-spoke system that relies heavily on channeling passengers through connecting points, particularly for the smaller city-pair markets. Table II-4 illustrates this. In 1979, United provided 11 single-plane flights a day between South Bend and seven other points. In July, 1988, United Commuter provided 10 daily single-plane flights from South Bend, all to its connecting hub at O'Hare. Similarly, in July, 1979, North Central provided eight single-plane flights between South Bend and seven other points. In July, 1988, Northwest (which ultimately absorbed North Central), provided four daily single-plane flights from South Bend, all to its hub at Detroit.

Another way of comparing linear and hubbing systems, is to look at maps of flight patterns for 1979 and 1988. Appendix K.) As can be seen using American as an example, its 1979 map is well covered by flights spread out across its system. In 1989, by contrast, a vast majority of flights are to American's various connecting hubs.

The hubbing system works by moving waves of aircraft through points in large numbers, called banks. Within limits, the larger the bank, the better able it is to crossconnect passengers. For example, a bank that consists of service to and from 50 points will have more passengers to crossconnect than one that consists of only 25 points, assuming similar passenger potential per point. With feed from 50 points, a departing flight with a 100-seat aircraft would only have to attract one passenger from each other spoke point to achieve a 50 percent load factor, even assuming no local traffic. With feed from only 25 points, it would need twice as many feed passengers from each spoke point to achieve the same load factor.

The competitive implications of concentration at hubs will be discussed later, but it is apparent that hubbing creates pressure toward increased concentration. In fact, hubbing will not work effectively without an element of concentration. Hubbing, therefore, provides an incentive for carriers to attempt to control traffic at their hubbing point. At the same time, hubbing provides an equally strong incentive for a carrier to expand geographically. It can only crossconnect passengers at its hub if

it provides service to their ultimate destinations. When Piedmont elected to establish a hub at Charlotte it was a "regional" carrier with service focused in the East. For Charlotte to succeed as a hub, Piedmont had to expand service to major cities nationwide. Of course a number of factors have contributed to the push for carriers to expand in recent years, but hubbing played a major role in that trend. So hubbing has contributed to the process that has greatly expanded the numbers of competitors overall in city-pair markets, but, at the same time, it is a process that will not work in the absence of concentration at connecting hubs.

This is an important concept to consider. If it is concluded that the hubbing process tends to result in a non-competitive behavior in particular markets, but overall provides superior service, then care would have to be taken so that "fixing" the more limited problem did not weaken the process overall.

Service Effects of Hubbing

One way to evaluate the service effects of hubbing is to examine the broad industry statistics provided elsewhere in the study. How many carriers are serving how many points and city pairs, etc.

While certainly useful, that is not enough. Certain of the data tend to be conflicting (fewer carrier choices at points but greater carrier choices in city-pairs). Broad based statistics can also be misleading. As an example, a great many city-pairs that lost service when hubbing evolved were small points linked together as intermediate points on linear routes. The linear service was not provided to carry passengers between such points, but to move passengers from each point to other larger cities. So a statistic that shows that a number of city-pairs lost service may have little meaning.

A different approach is to make comparisons of service at actual points between 1979, when carriers predominantly provided linear service, and 1988. We have compared service at connecting hubs with similar points that are not connecting hubs, and we have compared current hub-and-spoke service with the previous linear service at a concentrated hub and two smaller spoke points at highly concentrated hubs. These comparisons suggest that generally hubbing is a much more efficient means of moving passengers. 1/

The first comparisons are shown in Tables II-1, II-2, and II-3. In the first table service at two concentrated connecting-hub complexes is compared with service at two similar points in terms of population and buying income that have not become connecting

1/ Not efficient in terms of costs, but the ability to move passengers when and where they wish to travel.

hubs. As would be expected, the service changes at the connecting hubs are quite dramatic, resulting in far more service than the communities would otherwise enjoy.

Tables II-2 and II-3 highlight the more focused nature of the hub-and-spoke system compared with the linear system. A vast majority of points that receive service now receive frequent daily service. Under the linear system, many points received only one or two daily flights. Note that the 1988 service is nonstop service only. One stop flights were not included because those transversing a connecting hub require the same ground time as a on-line connecting flight, and time constraints did not permit us to distinguish between flights that crossed a hub and those that did not.

The third comparison is shown in Tables II-4, II-5. These tables compare service at two small-hub spoke points of Dayton and Charlotte -- South Bend for Dayton and Columbia, S.C. for Charlotte.

Discussed in more detail in the narrative proceeding Table II-4, in 1979, South Bend received good service to Chicago, adequate service to Cleveland, and useful service to Detroit and Boston. Service to eight other cities consisted of either one or two flights, generally with one or more intermediate steps, and often

poorly timed for South Bend. Services to these points were simply by-products of linear service patterns aimed at serving other markets. In 1988, by contrast, South Bend had frequent, well-timed flights to eight connecting-hub complexes. A total of 46 daily flights were timed to hit connecting banks at the respective hubs, and each flight, therefore, connected to other flights serving scores of cities nationwide.

Columbia, in 1979, had service to 26 cities. Twenty of these 26 cities received only one, often poorly timed, multi-stop flight a day. Only two cities received good service, Atlanta with 13 flights a day, and Charlotte, with six flights a day. In 1988, Columbia received good, direct service only to the same two cities, Atlanta and Charlotte. Nevertheless, because these points are now well-developed connecting hubs, Columbia has excellent service to over a hundred cities throughout the country and its traffic has flourished.

Still another way to compare linear and hubbing systems is to consider the service impact of adding service to a new city. First, in the linear system it could be added as an intermediate stop on an existing (or new) round-trip flight, between other larger cities as follows:

A --- New Point --- C --- D

"New Point" receives a single, round trip flight between three other points and has to rely on connecting service to all other points. Because this is a linear system of operation, the connecting opportunities at the other points will tend to be limited.

Adding "New Point" to a major hubbing complex, on the other hand, would result in single-plane service only to the hub, but convenient connections to dozens of other cities. The trade off here, between less single-plane service for a great amount of convenient connecting service, is clearly positive. Moreover, in a hubbing situation it will be easier to provide "New Point" with frequent service which is also clearly a service advantage. This is precisely what has happened as the hubbing system has evolved. Even very small spoke points generally receive three or more round trips a day to one or more connecting hubs, and the flights typically include an early departing flight and late returning flight. While this frequent service to connecting hubs is typically with much smaller aircraft, the use of smaller aircraft to smaller points is more efficient, and the trade off of aircraft size for frequency has proven to be positive, particularly since a new generation of aircraft has been developed to serve smaller feed points.

Still another method for evaluating service is service quality as measured by load factor. It is difficult to compare load factors between city-pairs in a linear system with city-pairs in a hubbing

system due to the different structures of these systems. In a linear system, load factor on multi-stop flights will typically vary considerably segment-by-segment and be much higher on the segments closest to the large traffic generating points. In a hubbing system, loads are consolidated at the connecting hubs rather than built segment-by-segment. If quality of service is to be a problem in a hubbing system, however, it would surface at concentrated hubs. Thus, one way to evaluate this issue is to compare load factors at concentrated hubs with those at unconcentrated hubs. This comparison is shown in tables II-24 through II-31, and a quality-of-service problem is not evident. While the hubbing carriers have distinct load factor advantages over competitors at their hubs, their load factors tend to be even lower than average load factors at unconcentrated hubs. This type of evidence is not conclusive, however. For example, if hub concentration results in higher prices, load factors may appear reasonable because traffic levels are depressed. The pricing phase of the study may help us evaluate this possibility.

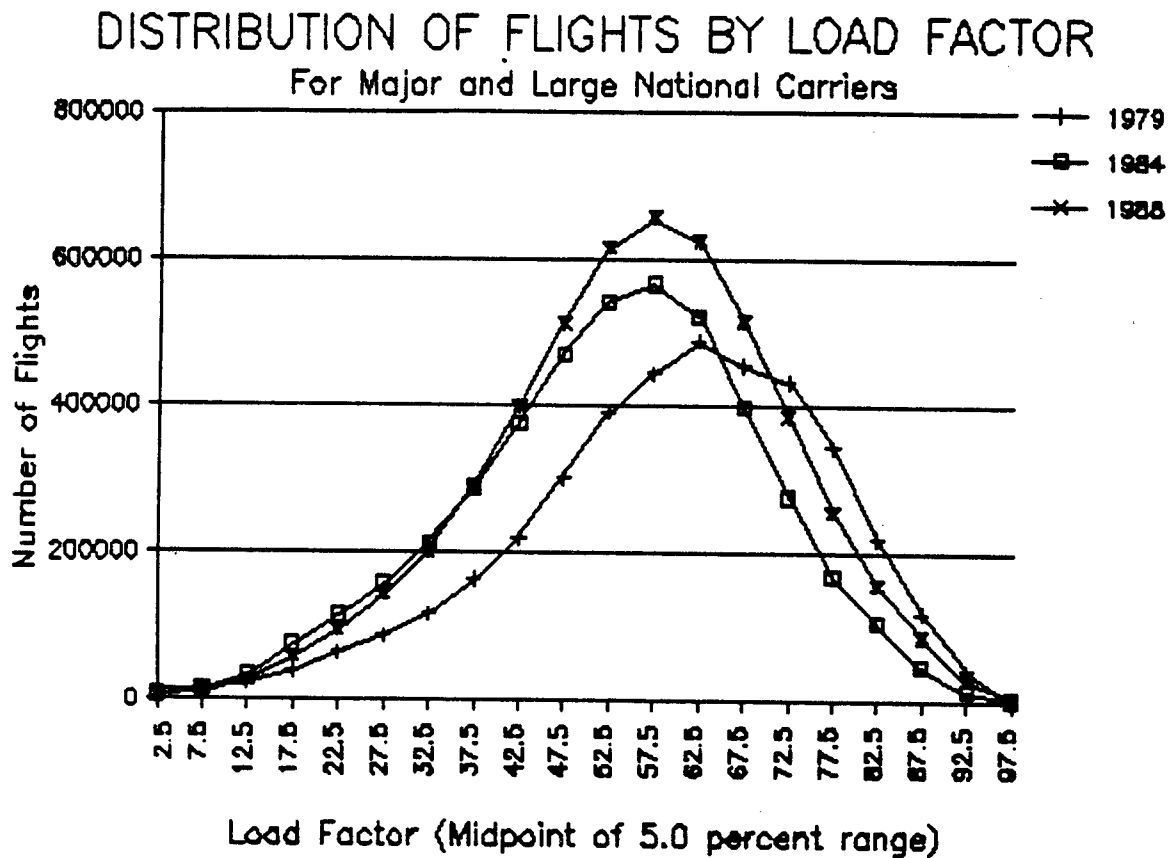
Another way to evaluate quality of service with load factor is to determine if, and how, the hub-and-spoke system has shifted the distribution of load factor. As indicated, under the linear system we would expect high segment load factors at the ends of linear flights and lower segment load factors in the middle segments. Did the hub-and-spoke system, which consolidates loads at connecting hubs alter this?

From an theoretical point of view, the ideal distribution would show a quick increase, so as to have few flights with low load factors, remain relatively high through the upper load factor ranges, and drop quickly in the high load factor ranges so as to not leave any unaccommodated passengers.

As shown, on the following chart, the 1988 distribution approaches a "normal" distribution, being less skewed toward higher load-factor flights than the 1979 distribution, slightly more than the 1984 distribution. The 1988 distribution is also not as flat in the middle ranges. This distribution reduces the economic cost and likelihood of "spillage", or passengers denied boarding because of the unavailability of seats, as well as economic loss due to flights operated with too few passengers.

Competitive Effects

An often expressed concern about hubbing is that it results in concentration that, in turn, results in monopoly service to smaller spoke cities where the hubbing carrier may control service and price. As discussed earlier, by its very nature hubbing results in concentration, and, in fact, will not work without some degree of concentration. Of course, the term concentration has a negative connotation, and it is easy to focus on this aspect of hubbing which, on its face, appears undesirable. For example, the last comparison made on Table II-1 shows that the number of spoke points receiving monopoly service have increased dramatically at the two connecting hubs and has declined at the other points.



Taken alone, that piece of information raises concerns. Tables II-6, II-7 and II-8, however, put a somewhat different complexion on the issue of concentration.

Tables II-2 through II-3, have already shown that much of the concentration at two dominated hubs is the result of adding new service to smaller, shorter-haul spoke points.

Tables II-6 through II-8 focus specifically on the small hub and non-hub spoke points of three concentrated connecting hubs. These tables show that virtually all small hubs and a vast majority of non hubs have done well with hub-and-spoke service. Note that a small hub like Akron, Ohio is a monopoly spoke that contributes to Piedmonts' concentration at Dayton. It is also a monopoly spoke at six other connecting hubs, in turn contributing to each of those hub carrier's dominance at their hubs. Nevertheless, Akron has available hundreds of connections to many points as a result of being a spoke city to each of those hubs and, obviously, when Akron passengers move beyond one of the connecting hubs various competitive alternatives are typically available.

Therefore, if we look behind concentration and focus on the actual service provided, the development of connecting hubs has clearly improved service for local travelers to and from the hubs and has also provided new service options for the spoke points that are connected to them. Thus, structurally, hubbing appears to provide substantial benefits to the traveling public. This does not fully address service quality, however.

Spoke points with service could still be underserved, although this would appear to run counter to the very concept of hubbing which relies on building traffic flows over connecting hubs. Moreover, even though the hub spoke points we have observed generally seem to be receiving better service, the service may be overpriced. Both of these concerns are minimized at the smaller spoke points by two factors. First, regardless of the service quality and price factors in the local hub markets, the availability of service in many of them represents new travel opportunities for travelers. Would travelers be better off without these opportunities? Second, most traffic at spoke points is not local traffic, but uses the service to connect to more distant points. For these passengers Dayton or Charlotte is just one of several travel alternatives and thus the emergence of these connecting hubs has intensified competition for such travelers despite the concentration that exists in local hub markets.

We have prepared several tables containing information about hub concentration. Many large and medium hubs are very concentrated and certain tendencies are appearing that cause concern, as will be discussed. However, as the proceeding examples at Dayton and Charlotte show, concentration statistics have to be viewed with great caution. Concentration has partly resulted from the addition of new service to connecting hubs. Moreover, passengers travel in city-pair markets and competition in city-pair markets has increased not despite the concentration at hubbing points but partly because of it as discussed above.

By any measure, concentration at many points has increased significantly as carriers have developed their hub-and-spoke networks. Most large hubs other than coastal cities are at least moderately concentrated connecting hubs. Six large hubs are now far more concentrated than the most concentrated hub in 1979 (Tables II-9 and II-10). At almost one half of the large hubs 50 percent or more of the departures are by a single carrier. At 20 of the 27 large hubs two carriers control 50 percent or more of departures, compared with 9 of 27 in 1979 (Table II-11). In 1979 the spread between hub-dominant carriers and their largest competitors exceeded 15 percent at only four large hubs. In 1988 that spread was exceeded at 20 hubs (Table II-12). At medium hubs, concentration changes are not nearly so dramatic but are nevertheless extensive, particularly at a few of them.

We next looked at hub competition by analyzing nonstop competition, and breaking it down by type of spoke point served (based on hub size), and status of the competition (hub carrier, code-affiliate, other end point hub carrier, non hub carriers). Table II-13 shows how hubbing carriers and their code-affiliate carriers work in tandem to dominate nonstop service at hubs. This theme is amplified in Tables II-14, II-15, II-16, and II-17. These tables also identify several areas of possible concern. At concentrated hubs, very little competition exists by carriers that do not hub at one end point. Since the competition exists from other hubbing carriers, most competitive service is to other large

or medium hubs. Inasmuch as city-pairs involving each hub and smaller spoke points would tend to be natural monopolies, lack of competition in those spoke markets is not necessarily a concern. However, Tables II-16 and II-17 reveal that nonstop monopolies often exist in large hub-to-large hub city pairs where we would expect to see competition. Nonstop monopolies even occur where both end points of the city-pair are concentrated hubs; i.e., there are numerous instances where hubbing carriers choose not to compete with one another even though competing services would appear likely.

Thus, one form of competition has faded at concentrated hubs (non-stop service by non-hubbing carriers), and non-stop competition by hub competitors appears to be lessening. Although city-pair markets in general appear to have more competitors than they did before hub-and-spoke systems were developed, this could change if the maturation of the hubbing process causes the markets to be further and further divided as appears to be the case at highly concentrated hubs. An important consideration, therefore, is whether the hubbing process can be expected to continue to develop by creating more-and-more highly concentrated hubs, and, if so, what can be done about it.

The data suggests that hub concentration is likely to increase but whether many additional hubs will become as dominated as the most concentrated are today is not clear. On the one hand, the trend

toward greater concentration has been inexorable at many large hubs. Once the level of single-carrier concentration has reached 40 percent, it has rarely been reversed. Instead it has tended to intensify, and single carrier concentration exceeds 40 percent at about one half of large and medium hubs. Aside from these tendencies in recent years, the move toward greater concentration appears to make sense from the individual carrier's standpoint. There are a number of factors at play in the industry today that place a premium on growth. Other things being equal, expansion can be expected to involve the least risk where a carrier already has a significant degree of concentration, and the most risk where another carrier already has a significant degree of concentration. This would seem to encourage carriers to expand by extending their dominance rather than by competing at other carriers' hubs.

On the other hand, the very highly concentrated hubs today have the lowest volumes of local traffic among large hubs. Does this suggest that it is too difficult to dominate a point with a large base of local traffic, or has the hubbing process simply not evolved to that point? The data do not offer guidance about the answer to this question.

In any event, although city-pair concentration is not as great as it was in 1979, there are indications that hubbing has eroded competition in some markets. Table II-16, for example, shows that

in a sampling of large city-pair markets of less than 1,000 miles, the number of single-plane competitors generally increased from 1979 to 1984 and they have since declined. Table II-18 and Table II-19 also show that these same markets generally are not subject to significant on-line connecting competition. Also, several very large city-pair markets have only one single-plane competitor and many of the same markets have very little on-line connecting competition. Has competition been chased away by an aggressive competitor offering superior service and price, or is this evidence of market power? The price section to follow may offer an answer.

Finally, service patterns of three hubs have been examined to illustrate how connecting banks function -- an unconcentrated hub (Boston), a highly concentrated hub (Minneapolis) and a concentrated hub dominated by two hubbing carrier (Denver). These are shown in Section II of Appendix K.

These charts show that the more carriers operating at a point, the less pronounced the peak/through pattern becomes, because the hub-and-spoke operations by the separate carriers spread out the connecting banks. These charts also show that the combination of a major carrier and its code affiliate create impressive connecting banks aimed at increasing traffic flows. Clearly this has implications for carriers who may try to compete. A carrier who attempts to compete for feed traffic would have to do so by

creating its own connecting banks which would be a formidable operational problem with a strong hubbing carrier already entrenched. Creation of a hubbing complex at another point may be the more efficient way to compete for the same feed traffic.

Load Factors

Although load factor is a measure of service quality it is also a measure of competitive intensity and it appears to have broad implications about hub-and-spoke systems.

The load factor analysis starts by focusing on city-pair dominance (rather than hub dominance). (Tables II-20 and II-22). These data show that dominant carriers in city-pair markets have a clear load factor advantage over other carriers and that this advantage intensifies with increases in the level of dominance. Significantly, this is not a new phenomenon. This tendency was nearly as strong in 1984 and 1979 as in 1988. What has changed dramatically since 1979 is the number of concentrated city-pair markets created as a result of hubbing (Table II-23). There is no way of determining whether dominance related load factor advantages may have been a motivating force behind hubbing, which gives a carrier a measure of control of traffic flows at its hub, or is a by-product of a system that may have been prompted by the belief that its effectiveness stems from offering a superior service product. Nevertheless, the effect translates into very significant load factor advantages for dominant carriers at highly concentrated hubs (Tables II-4 through II-31). The dominant carrier has a significant load factor advantage in every instance, averaging over nine percentage points for these

hubs (Tables II-24 and II-27). Much of the load factor advantage for dominant carriers stems from their higher load factors in monopoly markets, compared either with their own competitive load factors or other carriers' monopoly load factors. Even in competitive markets, however, where the competing service is typically by other hubbing carriers who tend to offer equivalent frequency, the hubbing carrier at a highly concentrated hub generally has a significant load factor advantage. The dominant carrier is able to operate more flights profitably, and the weaker carriers, in terms of load factor, have to choose between cutting frequency or reducing yield (to boost load factor), or exiting the non-stop market. They apparently have made the latter choice in many instances at concentrated hubs.

Nevertheless, concentrated hubs are located at important cities which are generally included in the portfolio of markets served by other hubbing carriers. This fact tends to limit the degree of concentration in spite of the observed load factor advantage.

Curiously, overall average load factors in city-pair markets at concentrated hubs are lower than those at unconcentrated hubs. This is not simply a function of differences in the particular markets involved, because it systematically stems from much lower

load factors in competitive markets. One explanation for this could be that the hubbing carriers offer quality service (frequency) in order to maintain their dominant positions. If so, this clearly offers a short-run benefit to travelers in those markets but the long-run impact is less clear. The result may be to eventually drive out more competition, as the increasing dominance in recent years at many large hubs suggests. But as noted above there is probably a limit to this trend. At this point in the development of hubs it is sufficient to note that the higher load factors of hub-dominant carriers at their hubs are consistent with a superior service hypothesis.

One possible senario for the maturing process at connecting hubs is that a carrier gains control of traffic through expansion to many new points and then uses that leverage to push competitors out. As we have noted the highly concentrated hubs are all the smaller hubs in terms of local traffic potential. This suggests that points with larger local traffic bases may be too difficult to dominate with feed traffic.

Tables II-29 through II-31 show that load factor increases with city-pair density, without regard to degree of concentration. Nevertheless, the hub-dominant carrier's load factor advantage does not depend on city-pair density. Similarly, the number of competitors depress load factors in all but the largest unconcentrated city-pairs.

Table II-32 suggest a strong connection between degree of hub dominance and extent of the load factor advantage for the hubbing carrier.

COMPARISON OF SELECTED INFORMATION AT CONNECTING
HUB CITIES AND SIMILAR CITIES THAT ARE NOT CONNECTING HUBS.

Tables II-1, II-2, and II-3

Objectives: To evaluate how the development of a connecting hub affects service at the hub compared with other cities and to compare linear and hub-and-spoke service at specific cities.

Data Sources: DOT's Origin-Destination Survey of Airline Passenger Traffic, Table 1, and Airport Activity Statistics of Certificated Route Air Carriers, the Official Airline Guide, and Sales and Market Management.

Observations/Interpretation: Table II-1 compares service at four points having similar populations and buying income, two of which became connecting-hub complexes (Dayton and Charlotte), and two of which did not (Columbus, Ohio, and Louisville).

As shown, service changes at the connecting hubs were quite dramatic compared with the other hubs. Dayton's population is very similar to Louisville's and about three-fourths of that of Columbus, and Dayton received less service than either of these points in 1979. Nevertheless, Dayton's service tripled, in terms of departures, and doubled in terms of seats, compared with much smaller increases for Columbus and a decline in service for Louisville. Similarly, Charlotte, with a population very close to Louisville's and less than that of Columbus, more than tripled its service in terms of departures, and increased its service almost four-fold, in terms of seats.

In terms of city-pairs served, Columbus and Louisville receive service to far fewer city pairs than in 1979, while Dayton receives service to the same total number, with almost twice as many nonstop city pairs. Moreover, as shown in Tables II-2 and II-3 (to be discussed next) a more detailed look at service at Charlotte and Dayton shows that many of the points that received single-plane service in 1979 received only one flight a day, often with one or two stops. Charlotte receives service to 50 percent more points and two and one-third more points nonstop.

The last comparison made shows that the number of spoke points receiving monopoly service has increased dramatically to the connecting hubs, and has declined to the other two hubs.

The Dayton Hub

It is easy to focus on the concentration aspect of hubbing which on its face appears to be undesirable. In July, 1988, Piedmont accounted for about three-fourths of departures and seats out of Dayton. Thirty-three of the 39 cities served nonstop out of Dayton were served by a single carrier, and Piedmont had the only nonstop service in 11 markets that were served by other carriers in 1979. These facts fit the mold of what one tends to think of when one thinks of a highly concentrated connecting hub -- a large amount of monopoly service with the dominant carrier squeezing out the competition.

There is much more to the picture than this, however. When we look at how Piedmont created its dominant position at Dayton, and compare 1988 service at Dayton with (1) service at comparable sized cities that are not connecting hubs and (2) Dayton's 1979 service, we began to gain a somewhat different perspective about the effects of hubbing (Table II-2).

First, Piedmont added service to 15 cities that did not receive service to Dayton in 1979. Thus, a significant part of Piedmont's concentration at Dayton results from providing a service that did not previously exist for travelers desiring to go to or beyond Dayton. And for every new local Dayton city-pair monopoly that was created by adding new service to Dayton, Piedmont simultaneously created new intermediate hub competition for travelers moving between the spoke point and dozens of beyond points served out of Dayton. This is one reason why city-pair markets are less concentrated at the same time hub-concentration has increased.

Second, almost twice as many cities received non-stop service to Dayton in 1988 as in 1979.

Third, three times as many cities received three or more round trips per day in 1988 as in 1978. Many of the cities with service to Dayton in 1979 received a single one-stop or two-stop flight that was part of a longer linear service pattern and consequently, was not well timed for service to Dayton.

Fourth, of the 13 small-hub and non-hub spoke points served in 1988, all received monopoly service by Piedmont. However;

- 10 of these 13 points did not receive service to Dayton in 1979.

- All service between similar sized cities and Dayton in 1979 was also monopoly service.
- Each of these spoke points had more competitors in 1988 than in 1979, and is therefore less concentrated.

- Each of these 13 smaller spoke points continues to receive service to points other than Dayton, including several other carriers' connecting hubs.
- Each of these 13 smaller spoke points receives better service now than it did in 1979, generally far superior because of the availability of frequent service to various connecting hubs.

The Charlotte Hub

In July of 1988, Piedmont accounted for a little more than 90 percent of the capacity at Charlotte. Sixty-four of the 73 cities served nonstop out of Charlotte were served by a single carrier, and Piedmont had the only nonstop service in 16 markets that were served nonstop by other carriers in 1979. However, as Table II-3 shows:

- Piedmont added service to 28 points that did not receive service to Charlotte in 1979, or 40 percent of the cities served in July, 1988.
- Twice as many cities received nonstop service to Charlotte in 1988 as in 1979.
- Four times as many cities received three or more round trips in 1988 as in 1979.

With regard to smaller cities served to Charlotte, only one of the 23 non-hub points that received service in 1988 had competing service to Charlotte by another carrier. However;

- 18 of these 23 cities did not receive any service to Charlotte in 1979.
- Most of these cities continue to receive service to other points, including other carriers' connecting hubs.
- Virtually all of these points receive frequent service that is superior to service received in 1979, when many cities received only one or two flights a day.

Therefore, if we look behind concentration and focus on the actual service provided, in terms of cities served and frequency, Piedmont's development of connecting hubs at Dayton and Charlotte has improved service for many O&D travelers at these hubs as well as provided new service options for the spoke points that are now connected to them. This does not fully address service quality because points with service could still be under serviced. At the smaller spoke points this concern is minimized by two factors, however. First, regardless of the service quality and price factors in the local hub markets, the availability of service in many of them represents new travel opportunities for travelers.

Would travelers be better off without these opportunities? Second, most traffic at spoke points is not local traffic, but uses the service to connect to more distant points. For these passengers Dayton or Charlotte is just one of several travel alternatives and thus the emergence of these connecting hubs should intensify competition for such travelers despite the concentration that exists in local hub markets.

Comparison of Connecting Hub Cities to
Similar-Sized Cities That Are Not Connecting Hubs

| | Dayton | Columbus | Louisville | Charlotte |
|--|----------|----------|------------|-----------|
| Population (000) 1/ | | | | |
| EBI (000) 1/ | 935 | 1,314 | 966 | 1,088 |
| | \$12,255 | \$17,062 | \$11,833 | \$13,438 |
| O&D Passengers (000) 2/ | | | | |
| Enplanements (000) 3/ | 1,907 | 3,309 | 1,837 | 3,231 |
| | 2,140 | 1,759 | 1,014 | 6,620 |
| Departures: 4/ | | | | |
| 1979 (July) | 477 | 509 | 684 | 895 |
| 1988 (July) | 1,233 | 852 | 629 | 2,938 |
| Amount Increase | 756 | 343 | (55) | 2,043 |
| Percent Increase | 158% | 67% | (8)% | 228% |
| Seats: 4/ | | | | |
| 1979 (July) | 45,744 | 52,210 | 60,072 | 72,120 |
| 1988 (July) | 98,631 | 77,210 | 55,987 | 274,497 |
| Amount Increase | 52,887 | 25,000 | (4,085) | 202,377 |
| Percent Increase | 116% | 48% | (7)% | 281% |
| Number of Spoke Cities by Hub Class: 4/ | | | | |
| 1979: | | | | |
| Large | All | All | All | All |
| Medium | 18 | 24 | 26 | 17 |
| Small | 14 | 13 | 10 | 9 |
| Nonhub | 5 | 7 | 15 | 12 |
| Total | 2 | 0 | 10 | 11 |
| | 39 | 44 | 61 | 49 |
| | | | | |
| | Nonstop | Nonstop | Nonstop | Nonstop |
| | 12 | 16 | 14 | 11 |
| | 6 | 6 | 4 | 6 |
| | 3 | 2 | 5 | 8 |
| | 0 | 0 | 5 | 7 |
| | 21 | 24 | 28 | 32 |
| | | | | |
| 1988: | | | | |
| Large | 19 | 14 | 11 | 21 |
| Medium | 7 | 9 | 8 | 13 |
| Small | 7 | 0 | 2 | 16 |
| Nonhub | 6 | 0 | 0 | 23 |
| Total | 39 | 23 | 21 | 73 |

Comparison of Connecting Hub Cities to
Similar-Sized Cities That Are Not Connecting Hubs

| Number of Cities with 1, 2, or 3+ round trips per day: 4/ | 1RT | | | 2RT | | | 3RT | | | 1RT | | | 2RT | | | 3RT | | |
|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 1RT | 2RT | 3RT | 1RT | 2RT | 3RT | 1RT | 2RT | 3RT | 1RT | 2RT | 3RT | 1RT | 2RT | 3RT | 1RT | 2RT | 3RT |
| 1979 (all service) | 12 | 9 | 18 | 20 | 8 | 16 | 31 | 11 | 19 | 12 | 16 | 21 | 12 | 16 | 21 | 12 | 16 | 21 |
| 1979 (nonstop service) | 5 | 6 | 10 | 13 | 2 | 9 | 7 | 7 | 14 | 8 | 9 | 15 | 8 | 9 | 15 | 8 | 9 | 15 |
| 1988 (nonstop service) | 2 | 7 | 30 | 1 | 6 | 16 | 4 | 2 | 15 | 2 | 9 | 60 | 2 | 9 | 60 | 2 | 9 | 60 |
| Cities with Monopoly Service 4/ | 79 | | 88 | 79 | | 88 | 79 | | 88 | 79 | | 88 | 79 | | 88 | 79 | | 88 |
| Large | 12 | | 17 | 13 | | 9 | 17 | | 7 | 8 | | 15 | 8 | | 15 | 8 | | 15 |
| Medium | 8 | | 4 | 9 | | 4 | 8 | | 3 | 9 | | 12 | 9 | | 12 | 9 | | 12 |
| Small | 4 | | 7 | 8 | | 0 | 11 | | 2 | 8 | | 15 | 8 | | 15 | 8 | | 15 |
| Nonhub | 2 | | 6 | 0 | | 0 | 12 | | 0 | 9 | | 22 | 9 | | 22 | 9 | | 22 |
| Total | 26 | | 34 | 30 | | 13 | 48 | | 12 | 34 | | 64 | 34 | | 64 | 34 | | 64 |

- 1/ Sales and Marketing Management, 1988 Survey of Buying Power, Vol. 140, No. 11, Bell Communications, Inc., 633 Third Avenue, New York, NY 10017. Data for 1987.
 2/ Origin-Destination Survey of Airline Passenger Traffic, Table 1, 1988, U.S. Department of Transportation.
 3/ Airport Activity Statistics of Certificated Route Air Carriers, 1988, U.S. Department of Transportation.
 4/ Official Airline Guide, July 1, 1979 and 1988.

CHARLOTTE
Comparison of Scheduled Service
July 1, 1979 vs July 1, 1988

| Spoke Point | July 1979 (Carrier/Frequency) | | | July 1988 - Nonstop (Carrier/Frequency) | |
|---------------------------------------|-------------------------------|------------|----------|--|-----------------|
| | Nonstop | One-Stop | Two-Stop | Major Carriers | Code Affiliates |
| <u>Points Served in 1979 and 1988</u> | | | | | |
| <u>Large Hubs</u> | | | | | |
| Atlanta | DL/6, EA/7 | EA/2 | | PI/6, DL/6, EA/7 | EA*/2 |
| Boston | | EA/3, PI/1 | | PI/5 | |
| Chicago | EA/3 | PI/1 | | PI/10, UA/3 | |
| Dallas | PI/2 | EA/1 | | PI/4, AA/3 | |
| Detroit | | EA/2 | | PI/4 | |
| Los Angeles | | UA/2 | | PI/2 | |
| Memphis | UA/2 | PI/2 | | PI/2 | |
| Miami | EA/1, PI/1 | | | PI/5, EA/1 | |
| NYC-LGA | EA/10 | EA/3 | | PI/7 | |
| Philadelphia | EA/4 | | | PI/6 | |
| Pittsburgh | EA/4 | | | PI/4, AL/3 | |
| St. Louis | EA/2 | | | PI/3, TN/3 | |
| San Francisco | | EA/2, UA/2 | | PI/2 | |
| Seattle | | EA/1 | | PI/2 | |
| Tampa | PI/1 | | EA/1 | PI/6 | |
| Washington | EA/4 | EA/1, PI/2 | | PI/6 | |
| <u>Medium Hubs</u> | | | | | |
| Baltimore | | EA/1 | | PI/6 | |
| Cleveland | EA/1 | EA/1 | | PI/3 | |
| Columbus | EA/1 | | | PI/3 | |
| Jacksonville | EA/1 | EA/1 | | PI/5 | |
| Nashville | PI/2 | | | PI/4 | |
| Raleigh/Durham | AK/2, PI/2, EA/2, UA/6 | | | PI/8, AA/3, EA/1 | PI*/4 |

CHARLOTTE
Comparison of Scheduled Service
July 1, 1979 vs July 1, 1988

| Spike Point | July 1979 (Carrier/Frequency) | | | July 1988 - Nonstop (Carrier/Frequency) | |
|---------------------------------------|-------------------------------|----------|----------|--|-----------------|
| | Nonstop | One-Stop | Two-Stop | Major Carriers | Code Affiliates |
| <u>Points Served in 1979 and 1988</u> | | | | | |
| <u>Small Hubs</u> | | | | | |
| Birmingham | UA/1 | EA/1 | | PI/4 | |
| Charleston, SC | EA/4 | | | PI/4 | |
| Charleston, W | | PI/1 | | PI/5 | PI*/2 |
| Chattanooga | ZN/2 | | | PI/2 | |
| Columbia, SC | EA/5, PI/1 | | | PI/4, AA/2, | PI*/6 |
| | | | | UA/1 | |
| Daytona Beach | EA/1 | | | PI/1 | |
| Greensboro | IL/1, EA/3, PI/2, SG/3 | | | PI/10 | PI*/7 |
| Knoxville | PI/2 | PI/1 | | | |
| Louisville | | PI/1 | | PI/4 | PI*/3 |
| Norfolk | PI/2 | PI/1 | | PI/3 | |
| Richmond | PI/3 | | | PI/7 | |
| Tallahassee | | EA/2 | | PI/8 | |
| | | | | PI/3 | |
| <u>Non Hubs</u> | | | | | |
| Asheville | PI/2, WR/3 | | | PI/6 | PI*/6 |
| Fayetteville | PI/1 | | | PI/8, AA/2 | |
| Florence | EN/4 | | | | PI*/6 |
| Hickory | EN/7 | | | | PI*/9 |
| Lynchburg | | | PI/1 | PI/2 | PI*/2 |
| Myrtle Beach | PI/1 | | PI/1 | PI/6 | |
| Rocky Mount | | PI/2 | | | PI*/6 |
| Tri City | PI/1, SG/3 | PI/1 | | PI/6 | PI*/1 |
| Wilmington | | PI/2 | | PI/6 | PI*/4 |

CHARLOTTE
Comparison of Scheduled Service
July 1, 1979 vs July 1, 1988

| Spoke Point | July 1979 (Carrier/Frequency) | | | July 1988 - Nonstop (Carrier/Frequency) | |
|---|-------------------------------|----------|----------|--|--------------------|
| | Nonstop | One-Stop | Two-Stop | Major Carriers | Code Affiliates |
| <u>Points Served in 1988 but not 1979</u> | | | | | |
| <u>Large Hubs</u> | | | | | |
| Denver | | | | PI/2 | |
| Houston | | | | PI/4 | |
| Minneapolis | | | | PI/2 | |
| NYC-EWR | | | | PI/8 | |
| NYC-JFK | | | | PI/1 | |
| NYC-Orlando | | | | PI/5 | |
| <u>Medium Hubs</u> | | | | | |
| Cincinnati | | | | PI/2 | |
| Dayton | | | | PI/3 | |
| Ft. Lauderdale | | | | PI/3 | |
| Ft. Myers | | | | PI/1 | |
| New Orleans | | | | PI/4 | |
| Indianapolis | | | | PI/2 | |
| <u>Small Hubs</u> | | | | | |
| Greenville, SC | | | | | PI*/6 |
| Lexington | | | | PI/2 | |
| Roanoke | | | | PI/7 | |
| Savannah | | | | PI/3 | |
| <u>Non Hubs</u> | | | | | |
| Athens | | | | | PI*/6 |
| Augusta | | | | PI/2 | PI*/7 |
| Beckley | | | | | PI*/5 |
| Bluefield | | | | | PI*/4 |
| Brunswick | | | | | PI*/4 |
| Charlottesville | | | | PI/2 | PI*/1 |
| Danville | | | | | PI*/3 |
| Greenville, NC | | | | | PI*/7 |
| Hilton Head | | | | | PI*/5 |
| Huntington | | | | PI/3 | PI*/4 |
| Jacksonville, NC | | | | PI/3 | PI*/3 |
| Kinston | | | | PI/2 | PI*/4 |
| Macon | | | | | PI*/4 |
| New Bern | | | | | PI*/5 |

CHARLOTTE
Comparison of Scheduled Service
July 1, 1979 vs July 1, 1988

| <u>Spoke Point</u> | <u>July 1979 (Carrier/Frequency)</u> | | | <u>July 1988 - Nonstop (Carrier/Frequency)</u> | |
|---|--------------------------------------|-----------------|-----------------|--|----------------------------|
| | <u>Nonstop</u> | <u>One-Stop</u> | <u>Two-Stop</u> | <u>Major Carriers</u> | <u>Code Affiliates</u> |
| <u>Points Served in 1979 but not 1988</u> | | | | | |
| <u>Large Hubs</u> | | | | | |
| San Diego | | DL/1 | | | |
| <u>Medium Hubs</u> | | | | | |
| Hartford | | EA/1 | | | |
| Syracuse | | EA/1 | | | |
| Tulsa | | DL/1 | | | |
| <u>Small Hubs</u> | | | | | |
| None | | | | | |
| <u>Non Hubs</u> | | | | | |
| London/Corbin | | PI/1 | | | |
| Pinehurst | VL/2 | | PI/1 | | |

SOURCE: Official Airline Guide.

DAYTON
Comparison of Scheduled Service
July 1, 1979 vs July 1, 1988

| Spoke Point | July 1979 (Carrier/Frequency) | | | July 1988 - Nonstop (Carrier/Frequency) | |
|---|-------------------------------|------------------|----------|--|----------------------|
| | Nonstop | One-Stop | Two-Stop | Major Carriers | Code Affiliates |
| <u>Points Served in 1979 and 1988</u> | | | | | |
| <u>Large Hubs</u> | | | | | |
| Atlanta | DL/6 | DL/2 | | DL/2 | |
| Boston | | TW/2 | AL/2 | PI/2 | |
| Chicago | TW/3, UA/2 | | | AA/5, UA/5 | |
| Dallas | AA/2 | AA/1 | | PI/3 | |
| Denver | TW/1 | | NC/1 | PI/1 | |
| Detroit | AL/1, DL/1 | | DL/1 | | DL*/1, NW*/1, PT*/12 |
| Los Angeles | TW/1 | AA/1, TW/2 | | PI/1 | |
| Minneapolis | | NC/3 | | NW/2 | |
| NYC-LGA | TW/3 | | | PI/4 | |
| Philadelphia | AL/1, TW/1 | AL/2, NC/1, TW/1 | | PI/4 | |
| Pittsburgh | AL/4, TW/2 | | | AL/4 | |
| St. Louis | AL/1, TW/4 | | | TW/5 | |
| San Francisco | | TW/2 | | PI/2 | |
| Tampa | | DL/2 | | PI/2 | |
| Washington | TW/2, UA/2 | | | PI/6 | |
| <u>Medium Hubs</u> | | | | | |
| Cincinnati | DL/2, NC/2, CH/3 | | | DL/1 | DL*/8 |
| Cleveland | AL/1, CH/8 | | | | DL*/1, PT*/11 |
| Columbus | DL/4, NL/1, AA/2 | | | | PT*/7 |
| Indianapolis | AL/1, TW/1 | | | | DL*/1, PT*/8 |
| Milwaukee | NC/3 | | | | NW*/2, DL*/2 |
| <u>Small Hubs</u> | | | | | |
| Akron | CH/2 | | | PI/3 | PT*/3 |
| Louisville | AL/2 | | | PI/3 | PT*/1 |
| Toledo | DL/1 | | | PI/2 | |
| <u>Points Served in 1988 but not 1979</u> | | | | | |
| <u>Large Hubs</u> | | | | | |
| Charlotte | | | | PI/5 | |
| Miami | | | | PI/2 | |
| NYC-EWR | | | | PI/4 | |
| Orlando | | | | PI/3 | |
| <u>Medium Hubs</u> | | | | | |
| Baltimore | | | | PI/1 | |
| Nashville | | | | | AA*/3 |

DAYTON
Comparison of Scheduled Service
July 1, 1979 vs July 1, 1988

| Spoke Point | July 1979 (Carrier/Frequency) | | | July 1988 - Nonstop (Carrier/Frequency) | |
|---|-------------------------------|----------|----------|--|-----------------|
| | Nonstop | One-Stop | Two-Stop | Major Carriers | Code Affiliates |
| <u>Points Served in 1988 but not 1979</u> | | | | | |
| <u>Small Hubs</u> | | | | | |
| Ft. Wayne | | | | PI/1 | PI*/2 |
| Grand Rapids | | | | PI/4 | |
| Lexington | | | | | PI*/6 |
| South Bend | | | | PI/4 | |
| <u>Non Hubs</u> | | | | | |
| Champaign | | | | PI/4 | |
| Evansville | | | | PI/3 | PI*/2 |
| Flint | | | | PI/3 | PI*/1 |
| Kalamazoo | | | | PI/4 | |
| Lafayette | | | | | PI*/4 |
| Lansing | | | | PI/3 | |
| <u>Points Served in 1979 but not 1988</u> | | | | | |
| <u>Large Hubs</u> | | | | | |
| Kansas City | TW/1 | TW/3 | | | |
| Las Vegas | | | TW/2 | | |
| Phoenix | | TW/1 | | | |
| <u>Medium Hubs</u> | | | | | |
| Buffalo | AL/1 | AL/1 | AL/1 | | |
| Ft. Lauderdale | | DL/1 | DL/1 | | |
| Hartford | | AL/1 | | | |
| Omaha | | UA/1 | | | |
| Ontario | | AA/1 | | | |
| Rochester, NY | | AL/1 | | | |
| San Antonio | | | | AA/1 | |
| San Jose | | | | TW/1 | |
| Tucson | | | | TW/1 | |
| <u>Small Hubs</u> | | | | | |
| Albany, NY | | | AL/2 | | |
| Harrisburg | | AL/1 | | | |
| <u>Other Hubs</u> | | | | | |
| Erie | | AL/1 | | | |
| Newport News | | UA/1 | | | |

Source: Official Airline Guide

COMPARISON OF SINGLE-PLANE SERVICE,
JULY 1979 AND JULY 1988, AT
SOUTH BEND AND COLUMBIA, S.C.

Tables II-4 and II-5

Objectives: To illustrate the differences between linear and hub-and-spoke systems of operation, and to evaluate service at two small, monopoly spokes of highly concentrated hubs.

Data Source: The Official Airline Guide

Observations/Interpretation: Service to each of these points is vastly superior under the hub-and-spoke system.

South Bend: In 1979 South Bend had nine nonstop flights to Chicago and three flights to Cleveland, which provided well-timed service to each of these cities. South Bend also had four flights to Detroit, two of which provided useful service for South Bend. Service to nine other cities consisted of either one or two flights a day, generally with one or more intermediate stops, and often poorly timed for South Bend. For the most part, flights to these nine cities were simply by-products of linear service patterns aimed primarily at serving other cities. There was little demand for service between South Bend and such places as Kalamazoo, Jackson, La Crosse, Madison, and Ft. Wayne. United's single nonstop flight to Denver departed at 12:20 am, and North Central's flight to Minneapolis was a three-stop flight arriving at 11:55 pm. Thus, other than the flights to Chicago, Cleveland and Detroit, the single one-stop flights to Boston and Los Angeles were the only flights that provided meaningful service to South Bend passengers.

In contrast, in 1988 South Bend had frequent, well-timed flights to eight connecting hub complexes by eight different carriers. The hubbing carriers provided four flights in three instances, five flights in two instances, and either six, eight, or ten flights to the other three hubs, for a total of 46 flights most of which were timed to hit connecting banks. Most of the forty-six flights, therefore, connected to other flights serving dozens of cities nationwide.

Hubbing has clearly provided South Bend with service that is far more superior to that provided by the linear service structure that existed in 1979. This is reflected in the traffic, as enplanements have increased from 236,458 in 1979 to 342,224 in 1988. The growth is even more impressive since 1984, when the hubbing phenomenon really began to flourish. South Bend's enplanements had dropped to 206,248, thus South Bend's traffic has increased by two-thirds in the four years as hubbing has taken hold.

Columbia, S.C.: Columbia is another example of how hubbing has benefited small points, despite a decline in the number of departures. Departures dropped from 339 per week in July 1979, to 246 per week in July 1988 or almost 100 departures.

In 1979, only two points received good service from Columbia, Atlanta with 13 flights a day and Charlotte with six flights spread throughout the day. In addition, Boston received three flights (all multi-stop flights), and Charleston, S.C. received two flights timed early and late and thus offered reasonable service. Twenty-two other points received service; however, 20 received only one flight a day, 17 were multi-stop flights, and many were poorly timed for Columbia. As with South Bend, these flights to these cities were by-products of linear service patterns aimed primarily at serving other points.

In 1988, Columbia continued to receive good service to only two cities that received good service in 1979, Atlanta and Charlotte, (It also received limited service to other connecting hubs.) Nevertheless, because Atlanta and Charlotte have evolved into well-developed connecting hub complexes, Columbia travelers have excellent access to over a hundred cities with on-line connections at either Atlanta or Charlotte. With frequent service to and beyond these hubs, Columbia travelers have the convenience of traveling throughout the day to virtually any large city in the country. Here again, the improvement in service is reflected in the traffic response, where traffic increased from 438,673 enplanements in 1979 to 583,013 in 1988, a one-third increase. As with South Bend, moreover, the increase has been dramatic since 1984 when enplanements fell to 397,252. The growth from 1984 to 1988 was just over 50 percent.

South Bend
Scheduled Service, July 1979 and 1988

| From South Bend To | United | | | North Central | | |
|--------------------------|-------------------------------|---------------|--------------|-------------------------------|---------------|--------------|
| | Flt. No. (No. of Stops) | Dept. Time | Arr. Time | Flt. No. (No. of Stops) | Dept. Time | Arr. Time |
| Chicago | 101(0) | 7:00a | 7:34a | 852(0) | 7:20a | 7:50a |
| | 875(0) | 10:33a | 11:11a | 586(0) | 10:38a | 11:10a |
| | 556(0) | 1:57p | 2:35p | 858(0) | 6:00p | 6:30p |
| | 975(0) | 5:05p | 5:43p | 379(0) | 8:38p | 9:10p |
| | 865(0) | 9:30p | 10:05p | | | |
| Detroit | | | | 853(2) | 8:41a | 11:05a |
| | | | | 585(0) | 11:00a | 12:34a |
| | | | | 851(1) | 5:02p | 7:03p |
| | | | | 859(1) | 9:16p | 11:25p |
| Cleveland | 934(0) | 6:15a | 8:20a | | | |
| | 732(0) | 9:53a | 11:40a | | | |
| | 376(0) | 4:23p | 6:10p | | | |
| Boston | 732(1) | 9:53a | 1:43p | | | |
| Denver | 729(0) | 12:15p | 1:40p | | | |
| Ft. Wayne | 986(0) | 12:20a | 12:46a | | | |
| | 564(0) | 10:20p | 10:46p | | | |
| Hartford | 376(1) | 4:23p | 8:11p | | | |
| Jackson | | | | 853(1) | 8:41a | 10:35a |
| | | | | 857(0) | 5:02p | 6:32p |
| Kalamazoo | | | | 853(0) | 8:41a | 10:02a |
| | | | | 859(0) | 9:16p | 10:37p |
| LaCrosse | | | | 379(2) | 8:38p | 11:10p |
| Los Angeles | 101(1) | 7:00a | 10:35a | | | |
| Madison | | | | 379(1) | 8:38p | 10:27p |
| Minneapolis | | | | 379(3) | 8:30p | 11:15p |

Flight Itineraries

| United | | | | | North Central | | | | | | | |
|--------|-----|-----|-----|-----|---------------|-----|-----|-----|-----|-----|-----|-----|
| 101 | SEN | ORD | LAX | | 379 | DTW | AZO | SEN | ORD | MSN | LSE | MSP |
| 376 | ORD | SEN | CLE | BDL | 585 | ORD | SEN | DTW | | | | |
| 556 | ORD | SEN | ORD | | 586 | BOS | DTW | AZO | SEN | ORD | | |
| 564 | LAX | DEN | SEN | FWA | 852 | DTW | JXN | SEN | ORD | | | |
| 729 | FWA | SEN | DEN | | 853 | ORD | SEN | AZO | JXN | DTW | | |
| 732 | ORD | SEN | CLE | BOS | 857 | ORD | SEN | JXN | DTW | | | |
| 865 | SEN | ORD | | | 858 | CLE | DTW | AZO | SEN | ORD | | |
| 875 | BDL | CLE | SEN | ORD | 859 | ORD | SEN | AZO | DTW | | | |
| 934 | SEN | CLE | | | | | | | | | | |
| 975 | LGA | CLE | SEN | ORD | | | | | | | | |
| 986 | MSP | ORD | SEN | FWA | | | | | | | | |

South Bend
Scheduled Service, July 1979 and 1988

| From South Bend To | July 1988 Nonstop Service Only | | | | | | | |
|--------------------------|--------------------------------|-------------|---------------|--------------|---------------|-------------|---------------|--------------|
| | United | | | | North Central | | | |
| | Carrier | Flt. No. | Dept. Time | Arr. Time | Carrier | Flt. No. | Dept. Time | Arr. Time |
| Chicago | AA* | 4197 | 5:30a | 6:15a | UA* | 2667 | 5:45a | 6:15a |
| | AA* | 4275 | 7:20a | 8:05a | UA* | 2671 | 6:39a | 7:14a |
| | AA* | 4168 | 10:00a | 10:45a | UA* | 2673 | 8:09a | 8:44a |
| | AA* | 4279 | 11:54a | 12:39p | UA* | 2675 | 9:10a | 9:45a |
| | AA* | 4281 | 2:29p | 3:14p | UA* | 2679 | 11:39a | 12:14p |
| | AA* | 4218 | 3:59p | 4:44p | UA* | 2681 | 1:09p | 1:44p |
| | AA* | 4283 | 5:15p | 6:00p | UA* | 2685 | 2:09p | 2:44p |
| | AA* | 4186 | 8:15p | 9:00p | UA* | 2687 | 4:39p | 5:14p |
| | | | | | UA* | 2689 | 6:40p | 7:15p |
| | | | | | UA* | 2693 | 8:40p | 9:15p |
| | ML* | 1843 | 6:40a | 7:15a | | | | |
| | ML* | 1849 | 9:45a | 10:20a | OO* | 4700 | 6:05a | 6:45a |
| | ML* | 1857 | 12:25p | 1:00p | OO* | 4706 | 11:40a | 12:20p |
| | ML* | 1869 | 3:15p | 3:50p | OO* | 4708 | 2:35p | 3:15p |
| | ML* | 1861 | 6:15p | 6:50p | OO* | 4710 | 4:05p | 4:44p |
| Cincinnati | DL* | 3111 | 6:25a | 8:30a | | | | |
| | DL* | 3035 | 9:45a | 12:00p | | | | |
| | DL* | 3194 | 11:40a | 1:50p | | | | |
| | DL* | 3203 | 2:00p | 4:09p | | | | |
| | DL* | 3287 | 3:05p | 5:15p | | | | |
| | DL* | 3284 | 5:45p | 7:50p | | | | |
| Dayton | PI | 414 | 6:00a | 7:44a | | | | |
| | PI | 506 | 9:30a | 11:12a | | | | |
| | PI | 34 | 2:10p | 3:50p | | | | |
| | PI | 631 | 5:45p | 7:29p | | | | |
| Detroit | NW | 1480 | 6:00a | 7:49a | | | | |
| | NW | 1482 | 9:34a | 11:22a | | | | |
| | NW | 1484 | 1:15p | 3:03p | | | | |
| | NW | 1486 | 6:45p | 8:34p | | | | |
| Indianapolis | AL* | 3841 | 7:00a | 7:50a | | | | |
| | AL* | 3843 | 9:25a | 10:15a | | | | |
| | AL* | 3845 | 12:40p | 1:30p | | | | |
| | AL* | 3847 | 3:25p | 4:15p | | | | |
| | AL* | 3849 | 5:25p | 6:15p | | | | |
| St. Louis | TW* | 7491 | 7:09a | 8:25a | | | | |
| | TW* | 7493 | 10:09a | 11:26a | | | | |
| | TW* | 7489 | 1:19p | 2:46p | | | | |
| | TW* | 7495 | 5:05p | 6:22p | | | | |

South Bend
Scheduled Service, July 1979 and 1988

Flight Itineraries (July 1988)

American

All **SBN** ORD

Continental

| | | | |
|------|------------|-----|-----|
| 3035 | SBN | CVG | |
| 3111 | SBN | CVG | LEX |
| 3194 | SBN | CVG | TOL |
| 3203 | SBN | CVG | |
| 3247 | SBN | CVG | CAK |
| 3284 | SBN | CVG | CHA |

Midway

| | | | | |
|------------|------------|-----|-----|-----|
| 1861 | SBN | MDW | BMI | SPI |
| All others | SBN | MDW | | |

Northwest

| | | | |
|------------|------------|-----|-----|
| 1480 | SBN | DTW | ALB |
| All others | SBN | DTW | |

Piedmont

| | | | |
|-----|------------|-----|---------|
| 34 | SBN | DAY | EWB |
| 414 | SBN | DAY | DCA |
| 506 | SBN | DAY | MCO |
| 631 | SBN | DAY | CLT CAE |

United

| | | | | |
|------------------|--|-----|------------|-----|
| 2667, 2671, 2689 | | FWA | SBN | ORD |
| All others | | SBN | ORD | |

USAir

All **SBN** IND

Source: Official Airline Guide

Columbia, South Carolina
Scheduled Service, July 1979 and 1988

| From Columbia To | United | | | July 1979 Service North Central | | | Piedmont | | |
|------------------------|--|--|--|--|---|---|-------------------------------|---------------|--------------|
| | Flt. No. (Nb. of Stops) | Dept. Time | Arr. Time | Flt. No. (Nb. of Stops) | Dept. Time | Arr. Time | Flt. No. (Nb. of Stops) | Dept. Time | Arr. Time |
| Atlanta | 878(1) 945(0) 337(0) 267(0) 906(0) 124(0) 822(0) 485(0) | 4:00a 7:45a 11:07a 1:00p 3:55p 7:02p 9:00p 11:05p | 5:22a 8:39a 12:00n 1:53p 4:49p 7:55p 9:49p 11:53p | 148(0) 703(0) 311(0) 653(0) 489(0) | 7:43a 12:57p 5:05p 9:00p 9:35p | 8:29a 1:40p 5:54p 9:46p 10:20p | | | |
| Charlotte | | | | 370(0) 596(0) 358(0) 394(0) 660(0) | 7:00a 11:10a 3:43p 7:25p 11:20p | 7:29a 11:37a 4:10p 7:52p 11:46p | 939(0) | 10:40a | 11:11a |
| Boston | | | | 148(1) 596(2) | 7:43a 11:40a | 11:40a 2:58p | 48(2) | 4:33p | 7:59p |
| Washington | | | | 370(1) 394(1) | 7:00a 7:25p | 8:59a 9:39p | | | |
| Augusta | 878(0) | 4:00a | 4:22a | | | | | | |
| Beckley | | | | | | | 939(4) | 10:40a | 2:02p |
| Bluefield | | | | | | | 939(3) | 10:40a | 1:34p |
| Charleston, SC | 170(0) 576(0) 882(1) | 7:40a 9:05p 9:00p | 8:04a 9:29p 11:25p | | | | | | |
| Chicago | | | | | | | | | |
| Cincinnati | | | | | | | 939(6) | 10:40a | 3:49p |
| Columbus, OH | 124(2) | 7:02a | 10:42a | | | | | | |
| Dallas | 337(1) | 11:07a | 1:35p | | | | | | |
| Dayton Beach | | | | 499(1) | 9:35p | 12:14a | | | |
| Greensboro | | | | 566(0) | 10:53p | 11:26p | 939(1) | 10:40a | 12:00n |
| Huntington | | | | | | | 939(5) | 10:40a | 2:45p |
| Lexington | 124(1) | 7:02p | 9:40p | | | | | | |
| Los Angeles | 337(2) | 11:07a | 2:45p | | | | | | |
| Memphis | 485(1) | 11:05p | 12:40a | | | | | | |
| Miami | | | | | | | 3(0) | 12:14p | 1:45p |
| Nashville | 878(2) | 4:00a | 6:20a | | | | | | |
| NYC-EWR | | | | 358(1) | 3:43p | 6:08p | | | |
| NYC | 504(0) | 5:15p | 6:45p | | | | | | |
| Norfolk | | | | | | | 48(1) | 4:33p | 6:15p |
| Philadelphia | | | | 596(1) | 11:01a | 1:28p | | | |
| Richmond | | | | | | | 48(0) | 4:33p | 5:29p |
| Rockledge | | | | | | | 939(2) | 10:40a | 12:42p |

Columbia, South Carolina
Scheduled Service, July 1979 and 1988

Flight Itineraries (July 1979)

Delta

| | | | | |
|-----|-----|-----|-----|-----|
| 124 | CAE | ATL | LEX | OMH |
| 170 | ATL | CAE | CHS | |
| 267 | CHS | CAE | ATL | |
| 337 | CAE | ATL | DFW | LAX |
| 495 | CHS | CAE | ATL | MEM |
| 504 | ATL | CAE | LGA | |
| 527 | LGA | CAE | CHS | |
| 878 | CAE | AGS | ATL | BNA |
| 882 | CAE | ATL | ORD | |
| 906 | CAE | ATL | | |
| 945 | CAE | ATL | | |

Eastern

| | | | | | |
|-----|-----|-----|-----|-----|-----|
| 148 | CLE | CAE | ATL | BOS | |
| 311 | CAE | ATL | | | |
| 358 | CAE | CLT | EWR | | |
| 370 | ATL | CAE | CLT | DCA | |
| 394 | CAE | CLT | DCA | | |
| 499 | CAE | ATL | DAB | | |
| 566 | DFW | ATL | CAE | GSO | |
| 596 | CAE | CLT | PHL | BOS | |
| 653 | EWA | DCA | ADU | CAE | ATL |
| 680 | CAE | CLT | | | |
| 703 | CAE | ATL | | | |

Piedmont

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 3 | AVL | CAE | MIA | | | | | |
| 48 | MIA | CAE | RIC | ORF | BOS | | | |
| 939 | CAE | CLT | GSO | ROA | BLF | BKW | HTS | CVG |

Columbia, South Carolina
Scheduled Service, July 1979 and 1988

July 1988 Nonstop Service Only

| From Columbia To | United | | | | North Central | | | | Piedmont | | | |
|-------------------------|---------|-------------|---------------|--------------|---------------|-------------|---------------|--------------|----------|-------------|---------------|--------------|
| | Carrier | Flt. No. | Dept. Time | Arr. Time | Carrier | Flt. No. | Dept. Time | Arr. Time | Carrier | Flt. No. | Dept. Time | Arr. Time |
| Atlanta | DL | 278 | 6:40a | 7:35a | EA | 280 | 7:36a | 8:30a | | | | |
| | DL | 707 | 8:25a | 9:22a | EA* | 3174 | 10:35a | 11:35a | | | | |
| | DL | 1015 | 10:05a | 11:04a | EA | 714 | 12:34p | 1:25p | | | | |
| | DL | 593 | 11:45a | 12:42p | EA | 1657 | 2:23p | 3:17p | | | | |
| | DL | 1155 | 3:05p | 4:02p | EA* | 3212 | 3:40p | 4:40p | | | | |
| | DL | 536 | 4:55p | 5:51p | EA | 244 | 6:05p | 7:01p | | | | |
| | DL | 845 | 6:30p | 7:23p | EA* | 3176 | 7:40p | 8:40p | | | | |
| | DL | 1097 | 9:54p | 10:45p | | | | | | | | |
| Charlotte | PI | 661 | 6:50a | 7:20a | AA | 494 | 11:58a | 12:30p | UA | 587 | 4:00p | 4:10p |
| | PI | 88 | 7:50a | 8:24a | | | | | | | | |
| | PI | 324 | 10:55a | 11:29a | | | | | | | | |
| | PI* | 5329 | 11:52a | 12:37p | | | | | | | | |
| | PI* | 5398 | 2:02p | 2:47p | | | | | | | | |
| | PI | 121 | 3:05p | 3:39p | | | | | | | | |
| | PI* | 5340 | 4:15p | 4:55p | | | | | | | | |
| | PI* | 5342 | 6:15p | 6:55p | | | | | | | | |
| | PI* | 5347 | 7:29p | 8:14p | | | | | | | | |
| | PI* | 5344 | 8:25p | 9:10p | | | | | | | | |
| Chicago | UA | 375 | 8:00a | 8:47a | | | | | | | | |
| Raleigh | AA | 1152 | 8:39a | 9:30a | EA | 670 | 3:27p | 4:12p | | | | |
| | AA | 826 | 7:24p | 8:15p | | | | | | | | |
| New York (non-hub) | PI | 474 | 7:00a | 8:39a | | | | | | | | |
| | PI | 478 | 11:30a | 1:09p | | | | | | | | |
| | PI | 562 | 5:00p | 6:39p | | | | | | | | |
| Washington (non-hub) | UA | 1280 | 10:45a | 11:57a | PI | 950 | 6:35p | 8:00p | | | | |
| | UA | 1263 | 6:55p | 8:07a | | | | | | | | |

Columbia, South Carolina
Scheduled Service, July 1979 and 1988

Flight Itineraries (July 1988)

American

| | | | | |
|------|-----|-----|-----|-----|
| 494 | CAE | CLT | RDU | CLE |
| 826 | CAE | RDU | EWR | |
| 1152 | CAE | RDU | EWR | |

Delta

| | | | | | | |
|------|-----|-----|-----|-----|-----|-----|
| 278 | CAE | ATL | PNS | BTR | DFW | ABQ |
| 536 | CAE | ATL | | | | |
| 593 | CAE | ATL | | | | |
| 707 | CAE | ATL | | | | |
| 845 | CAE | ATL | | | | |
| 1015 | CAE | ATL | TLH | | | |
| 1097 | CAE | ATL | TYS | | | |
| 1155 | CAE | ATL | JAN | | | |

Eastern

| | | | | |
|------|-----|-----|-----|-----|
| 244 | CAE | ATL | ORD | |
| 280 | CAE | ATL | MSP | |
| 670 | HSV | ATL | CAE | RDU |
| 714 | CAE | ATL | ROC | |
| 1657 | CAE | ATL | | |
| 3174 | CAE | ATL | | |
| 3176 | CAE | ATL | | |
| 3212 | ILM | CAE | ATL | |

Piedmont

| | | | |
|------|-----|-----|-----|
| 88 | CAE | CLT | DCA |
| 121 | CAE | CLT | CLE |
| 324 | CAE | CLT | ORD |
| 474 | CAE | EWR | |
| 478 | CAE | EWR | |
| 562 | CAE | EWR | |
| 661 | CAE | CLT | NAS |
| 950 | CAE | BWI | PHL |
| 5329 | CAE | CLT | |
| 5340 | CAE | CLT | |
| 5342 | CAE | CLT | |
| 5344 | CAE | CLT | |
| 5347 | CAE | CLT | |
| 5398 | CAE | CLT | RDU |

United

| | | | |
|------|-----|-----|-----|
| 375 | CAE | ORD | TUL |
| 587 | CAE | CLT | ORD |
| 1263 | CAE | IAD | DTW |
| 1280 | CAE | IAD | BUF |

Source: Official Airline Guide

SELECTED SERVICE INFORMATION AND ENPLANEMENTS
FOR NON-HUB AND SMALL-HUB SPOKE POINTS OF
THREE CONCENTRATED HUBS

Tables II-6, II-7, and II-8

Objectives: To evaluate overall service and competition at these monopoly spoke points.

Data Sources: The Official Airline Guide, DOT Form 41, Schedule T-9, and DOT 298-C Reports.

Observations/Interpretation: Virtually all small-hub monopoly spoke points at Charlotte, Dayton, and Minneapolis have experienced an increase in the number of competitors and, as a consequence, are themselves less concentrated than they were in 1979. Most of the current competitors are other hubbing carriers that have monopoly spokes from these points to their own connecting-hub complexes. Each of the small hub points has added to the concentration levels at the various connecting hubs, yet each clearly has competitive alternatives for travelers who desire to travel beyond the connecting hubs. In many instances, the monopoly spokes represent new service to the connecting hub, and the service, therefore, is primarily intended to feed connecting traffic to the hub, rather than to generate local traffic. That the hub-and-spoke service has been accepted by the traveling public is reflected in the enplanement data, where the growth rate has generally been very high. This is true even at small-hub points where the number of departures declined from 1979 to 1988. This suggests that the more focused hub service, which channels traffic through connecting hubs with fairly intense levels of service, has been better accepted by travelers than the previous linear service.

The non-hub points as a group have also experienced an increase in the number of competitors. As with the small hubs, these competitors tend to be hubbing carriers that have monopoly spokes from these points to their respective hubs. Most of these "monopoly" spokes, therefore have competitive alternatives to cities other than the hub, and most have experienced significant traffic growth, particularly since 1984 as hubbing became more intense.

Table II-6
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CHARLOTTE
Selected Service Information and Explanations
for Non-Hub and Small Hub Spoke Points

| Spoke Points | Competition with | | Dominant Carrier Share | Weekly Increase in Departures | Percent | 1988 Connecting-Hub Service (Hub, Hubbing Carrier, and Daily Freq.) | | | | | | | | | | Other- Number of Hubs/Freq. | Annual Explanations (000) | | | |
|-----------------|---------------------|------|------------------------------|----------------------------------|---------|--|-----|-----|-----|----|----|-----|-----|----|----|-----------------------------------|------------------------------|-----|-----|-----|
| | 2+ RT 6 Days | 7/79 | | | | 7/88 | CLT | ATL | MDL | FA | AA | ROU | BWI | DL | UA | | IAD | PIT | ORD | ANA |
| | 7/79 | 7/88 | 7/79 | 7/88 | PI | IL | EA | AA | PI | DL | UA | UA | UA | AL | UA | UA | UA | AA | | |
| Non Hubs | | | | | | | | | | | | | | | | | | | | |
| Asheville | 2 | 4 | 89% | 44% | 69 | 11 | 6 | 6 | 3 | 2 | | | | | | | | 287 | 180 | 186 |
| Athens | 1 | 1 | 100 | 100 | (2) | 6 | | | | | | | | | | | | 22 | 5 | 11 |
| Augusta | 1 | 3 | 100 | 39 | 144 | 8 | 10 | 7 | | | | | | | | | | 234 | 182 | 205 |
| Beckley | 2 | 1 | 60 | 100 | (9) | 6 | | | | | | | | | | | | 14 | 3 | 15 |
| Bluefield | 2 | 1 | 65 | 100 | (23) | 6 | | | | | | | | | | | | 15 | 2 | 18 |
| Brunswick | 1 | 2 | 100 | 51 | 179 | 6 | 4 | | | | | | | | | | | 25 | 13 | 19 |
| Charlottesville | 1 | 3 | 100 | 52 | 148 | 5 | | | | 4 | | | | 5 | 6 | | | 134 | 87 | 64 |
| Danville | 2 | 1 | 61 | 100 | (58) | 3 | | | | | | | | | | | | 13 | 1 | 2 |
| Greenville | 1 | 3 | 100 | 65 | 84 | 5 | | | | 3 | | | | | | | | 55 | 4 | 6 |
| Fayetteville | 2 | 3 | 78 | 46 | 7 | 6 | 7 | | | 3 | 1 | | | | | | | 219 | 179 | 159 |
| Florence | 2 | 2 | 54 | 54 | 17 | 6 | | | | | | | | | | | | 45 | 20 | 32 |
| Hickory | 2 | 1 | 63 | 100 | (13) | 9 | | | | 4 | | | | | | | | 39 | 12 | 19 |
| Hilton Head | 2 | 2 | 68 | 53 | (15) | 5 | | | | 8 | | | | | | | | 62 | 5 | 6 |
| Huntington | 2 | 3 | 73 | 43 | 36 | 7 | | | | | | | | | | | | 107 | 79 | 131 |
| Jacksonville | 1 | 2 | 100 | 72 | 58 | 5 | | | | 3 | 2 | | | | | | | 111 | 93 | 47 |
| Kinston | 1 | 1 | 100 | 100 | 10 | 7 | | | | | | | | | | | | 68 | 77 | 57 |
| Lynchburg | 2 | 3 | 56 | 56 | (5) | 5 | | | | 2 | | | | | 5 | | | 94 | 51 | 50 |
| Macon | 2 | 3 | 57 | 47 | 140 | 4 | 7 | 5 | | 6 | | | | | | | | 49 | 62 | 93 |
| Myrtle Beach | 4 | 5 | 51 | 33 | (1) | 6 | 5 | 4 | | 3 | | | | | | | | 267 | 150 | 108 |
| New Bern | 1 | 2 | 100 | 72 | 60 | 4 | | | | 3 | 3 | | | | | | | 61 | 9 | 22 |
| Rocky Mount | 1 | 1 | 100 | 100 | 100 | 6 | | | | | | | | | | | | 22 | 1 | 5 |
| Tri City | 4 | 6 | 72 | 31 | 35 | 7 | 5 | 6 | | | 4 | | | | | | | 233 | 179 | 238 |
| Wilmington, NC | 1 | 3 | 100 | 72 | 34 | 8 | | | | 3 | 3 | | | | | | | 200 | 123 | 89 |

Table II-6
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CHARLOTTE
Selected Service Information and Explanations
for Non-Hub and Small Hub Spoke Points

| Spoke Points | Small Hubs | Competition With 2+ RT 6 Days 7/79 7/88 | Dominant Carrier Share 7/79 7/88 | Weekly Increase in Departures | | 1988 Connecting-Hub Service (Hub, Hubbing Carrier, Daily Freq.) | | | | | | | | | | | | Other- Number of Hubs/Freq. | Annual Explanants (000) | | | | | | | |
|-----------------|----------------|--|---|----------------------------------|---------|--|------|----|-----|-----|-----|-----|-----|-----|-----|------|------|-----------------------------------|----------------------------|-------|-------|----|----|----|----|----|
| | | | | Number | Percent | CLT | ATL | | RDU | BWI | CVG | JAD | PIT | ORD | BNA | 1988 | 1979 | | | | | | | | | |
| | | | | | | | PI | IL | | | | | | | | | | | EA | MA | PI | IL | UA | AL | UA | AA |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 7 | 9 | 358 | 308 | (49) | (11) | 4 | 10 | 7 | | | | | | | | | 987 | 603 | 794 | | | | | |
| | Birmingham | 5 | 5 | 30 | 28 | 77 | 36 | 4 | 8 | 6 | 3 | | 4 | | | | | | 661 | 416 | 463 | | | | | |
| | Charleston, SC | 3 | 5 | 48 | 33 | 82 | 48 | 5 | 5 | | | | | 4 | | | | | 269 | 217 | 251 | | | | | |
| | Charleston, WV | 3 | 5 | 68 | 30 | 61 | 42 | 7 | 7 | 8 | | | 3 | | | | | | 311 | 238 | 295 | | | | | |
| | Chattanooga | 5 | 5 | 39 | 39 | (93) | (27) | 10 | 7 | 7 | | | 2 | | | | | | 583 | 397 | 439 | | | | | |
| | Columbia, SC | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Daytona Beach | 2 | 5 | 89 | 36 | 73 | 55 | 1 | 3 | 4 | 2 | | 2 | | | | | | 441 | 244 | 394 | | | | | |
| | Greensboro | 5 | 6 | 44 | 55 | 68 | 17 | 17 | 6 | 5 | 7 | 5 | | | | | | | 999 | 787 | 695 | | | | | |
| | Greenville, SC | 2 | 6 | 65 | 32 | 167 | 152 | 11 | 10 | 9 | | | | | | | | | 593 | 369 | 346 | | | | | |
| | Knoxville | 6 | 8 | 43 | 31 | 129 | 51 | 7 | 7 | 8 | 3 | | 6 | 3 | 3 | 3 | 6 | | 628 | 436 | 490 | | | | | |
| | Lexington | 4 | 7 | 47 | 40 | 195 | 109 | 2 | 4 | 4 | | | 15 | 3 | 3 | 4 | 3 | | 418 | 312 | 341 | | | | | |
| | Louisville | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Norfolk | 8 | 10 | 28 | 37 | (55) | (8) | 3 | 6 | 3 | | | 14 | 1 | 4 | 4 | 4 | | 1,080 | 927 | 1,141 | | | | | |
| | Richmond | 4 | 10 | 48 | 45 | 284 | 75 | 9 | 5 | 5 | | | 5 | 2 | 5 | 4 | 4 | | 1,583 | 1,575 | 937 | | | | | |
| | Roanoke | 4 | 7 | 49 | 45 | 59 | 13 | 7 | 4 | 5 | 3 | | 6 | 3 | 5 | 4 | 3 | | 916 | 649 | 675 | | | | | |
| | Savannah | 2 | 5 | 90 | 42 | 5 | 2 | 6 | 6 | 6 | 3 | 5 | 2 | 5 | 8 | | | | 341 | 269 | 454 | | | | | |
| | Tallahassee | 3 | 5 | 43 | 29 | 59 | 36 | 3 | 6 | 5 | 3 | | | 1 | | | | | 531 | 413 | 385 | | | | | |
| | | 4 | 3 | 29 | 44 | 134 | 80 | 3 | 9 | 4 | | | | | | | | | 449 | 279 | 283 | | | | | |

SOURCES: Official Airline Guide, July 1, 1979 and 1988, DOT Form 41, Schedule T-3, DOT Form 298-C.

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DAYTON
Selected Service Information and Explanations
for Non-Hub and Small Hub Spoke Points

| Spoke Points | Competition With 2+ RT 6 Days 7/79 7/88 | Dominant Carrier Share 7/79 7/88 | Weekly Increase in Departures Number Percent | 1988 Connecting-Hub Service (Hub, Hubbing Carrier, and Daily Freq.) | | | | | | | | | | | | | | Other- Number of Hubs/Freq. | Annual Explanations (000) | |
|-----------------|--|---|--|--|----|----|----|----|----|----|-----|-----|-----|-----|----|------|-----------|-----------------------------------|------------------------------|------|
| | | | | Day | | | | | | | | | | | | | STL TW | | 1988 | 1979 |
| | | | | PI | IA | QA | AA | DL | NW | ML | MDW | PTT | BNA | IND | AL | | | | | |
| | | | | CG | DW | AA | AA | AA | AA | AA | AA | AA | AA | AA | AA | AA | | | | |
| Non-Hubs | | | | | | | | | | | | | | | | | | | | |
| Champaign | 2 | 5 | 618 | 268 | 4 | | | 4 | | 5 | | | | 5 | 7 | | 158 | 160 | | |
| Evansville | 3 | 7 | 42 | 26 | 4 | | | 7 | | | | | 5 | 3 | 10 | | 247 | 199 | | |
| Flint | 2 | 3 | 61 | 46 | 4 | | | | 7 | | | | | | | 1/4 | 133 | 119 | | |
| Kalamazoo | 2 | 6 | 53 | 23 | 4 | | | 5 | 5 | 3 | 6 | 5 | | | | 1/3 | 218 | 122 | | |
| Lafayette | 3 | 4 | 40 | 35 | 4 | | | | | | | | | | | | 21 | 23 | | |
| Lansing | 2 | 6 | 63 | 27 | 3 | | | 5 | 5 | 5 | 8 | 4 | | | | | 217 | 164 | | |
| Small Hubs | | | | | | | | | | | | | | | | | | | | |
| Akron | 3 | 6 | 55 | 45 | 6 | | | 3 | 2 | 6 | 5 | 10 | | | | 1/2 | 364 | 164 | | |
| Ft. Wayne | 3 | 6 | 46 | 25 | 5 | | | 8 | 4 | 7 | 4 | 5 | | 6 | | 1/1 | 305 | 238 | | |
| Grand Rapids | 3 | 6 | 57 | 27 | 4 | | | 6 | 8 | 6 | 7 | 5 | 4 | | | 3/8 | 645 | 523 | | |
| Lexington | 4 | 6 | 47 | 40 | 6 | | | 4 | 15 | | | 3 | 3 | | 2 | 4/13 | 418 | 312 | | |
| Louisville | 8 | 9 | 28 | 37 | 5 | | | 4 | 14 | 3 | 3 | 4 | | 3 | 5 | 9/26 | 1,080 | 927 | | |
| South Bend | 3 | 8 | 43 | 24 | 6 | | | 10 | 8 | 6 | 4 | 5 | | 5 | 4 | | 342 | 206 | | |
| Toledo | 8 | 6 | 33 | 27 | 6 | | | 4 | 5 | 5 | | 4 | | | 2 | 1/2 | 300 | 288 | | |
| | | | | | | | | | | | | | | | | | | 320 | | |

SOURCES: Official Airline Guide, July 1, 1979 and 1988, DOT Form 41, Schedule T-3, and DOT Form 198-C.

MINNEAPOLIS

Table II-8
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Table II-8
Page 2 of 2

MINNEAPOLIS
Selected Service Information and Explanations
for Non-Hub and Small Hub Spoke Points

| Spoke Points | Competition With 2+ RT 6 Days 7/79 7/88 | Dominant Carrier Share 7/79 7/88 | Weekly Increase in Departures Number Percent | 1988 Connecting-Hub Service (Hub, Hubbing Carrier, and Daily Freq.) | | | | | | | | | | | | Other- Number of Hubs/Freq. | Annual Explanements (000) | | | |
|-----------------|--|---|--|--|-------|------|----|-----|----|-----|----|----|----|-----|-----|-----------------------------------|------------------------------|-------|------|------|
| | | | | MSP | | ORD | | MDW | | DEN | | IA | | DTW | SIL | | SJC | 1988 | 1984 | 1979 |
| | | | | NW | UA | AA | ML | CO | IA | NW | UA | AA | ML | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Small Hubs | | | | | | | | | | | | | | | | | | | | |
| Billings | 4 | 5 | 378 | 618 | 47 | 19 | 3 | | 3 | 3 | | | | | | 285 | 313 | 358 | | |
| Cedar Rapids | 3 | 6 | 41 | 25 | 59 | 30 | 5 | 6 | 3 | | | 2 | 1 | 4 | | 378 | 229 | 262 | | |
| Des Moines | 6 | 8 | 39 | 16 | 14 | 4 | 5 | 6 | 4 | 4 | | | | | | 736 | 597 | 711 | | |
| Fargo | 3 | 2 | 52 | 59 | (73) | (52) | 6 | 1 | | | 2 | | | | | 195 | 153 | 198 | | |
| Grand Rapids | 3 | 7 | 57 | 27 | 58 | 20 | 2 | 6 | 9 | 5 | | | 7 | | | 645 | 523 | 463 | | |
| Lincoln | 4 | 6 | 59 | 23 | (31) | (14) | 4 | 3 | | | | | | | | 253 | 154 | 245 | | |
| Louisville | 8 | 10 | 28 | 37 | (55) | (8) | 1 | 4 | 3 | | | 2 | 3 | 5 | | 1,080 | 927 | 1,141 | | |
| Moline | 4 | 8 | 50 | 25 | 76 | 32 | 1 | 9 | 5 | 5 | | | | 8 | | 302 | 250 | 320 | | |
| Sioux Falls | 3 | 4 | 53 | 39 | (103) | (47) | 6 | 2 | | | | | | | | 240 | 198 | 281 | | |
| Spokane | 6 | 5 | 30 | 55 | 51 | 12 | 2 | 2 | | | | 2 | 2 | 1 | | 772 | 643 | 878 | | |

SOURCES: Official Airline Guide, July 1, 1979 and 1988, DOT Form 41, Schedule T-3, DOT Form 298-C.

DOMINANT CARRIER AT LARGE AND MEDIUM HUBS.

Tables II-9 and II-10

Objective: To study the trends and extent of single-carrier concentration at large and medium hubs.

Data Sources: Dominance is measured both in terms of departures and enplanements. The data source for departures is Official Airline Guide tapes. This does not distinguish between major carriers and their code-sharing affiliates. For example, the share of departures shown at Pittsburgh for USAir includes the departures for its Allegheny Commuter code-sharing affiliates. Thus, one basic assumption is that, since code sharers' operations are keyed to their major-carrier affiliates' connecting banks, their traffic feed contributes to the major carriers' dominance at their hubs. Another fundamental assumption when using share of departures as a measure of dominance is that it serves as a good proxy for share of traffic.

The data source for enplanements is the Form 41 reports of the certificated carriers (schedule T-3). This measures dominance on the basis of the traffic of the major, hubbing carrier only.

Observations/Interpretations: Large Hubs: As is widely known, carrier concentration has increased very dramatically, particularly during the last four years. Concentration occurs when a carrier establishes and then builds a connecting-hub complex at a point. As evidenced by the degree of concentration, virtually all large hubs other than coastal cities serve as connecting complexes.

- * The most concentrated large hub in 1979 was Pittsburgh, where USAir (then Alleghery) had about 60 percent of departures. Now, a single carrier accounts for 75 percent or more of the departures at six large hubs.
- * At almost half of the large hub cities, 50 percent or more of the departures are by a single carrier.
- * The more concentrated hubs tend to be those with the smallest local traffic base.

These concentration tables need to be viewed with caution. As discussed above, concentration often occurs as a result of adding a substantial volume of service to many new points. Also, discussed elsewhere, despite increasing hub concentrating city-pair concentration has been declining.

Medium Hubs: Concentration at medium hubs is much less dramatic than at large hubs but, nevertheless, has increased in recent years. Five medium hubs are now highly concentrated and in each instance, the hubbing carrier's dominance continues to increase.

In contrast to large hubs, where only two are now less concentrated than they were in 1979, about 40 percent of the medium hubs are less concentrated than they were in 1979. Also, whereas the concentration at most large hubs has rather steadily increased throughout the 10-year period since 1979, the level of concentration at most medium hubs dropped between 1979 and 1982 and continues to be less consistent except at the more concentrated hubs.

Perhaps the most striking observation is the number of medium hubs that are dominated by USAir or Piedmont. With these carriers combined, they will dominate 8 of the 15 most concentrated medium hubs, including virtually all medium hubs in the northeast.

DOMINANT CARRIER AT EACH MEDIUM HUB
(Based on Departures and 1988 FFA Hub Classifications)

| Hub | March 1989 | | July 1988 | | July 1986 | | July 1984 | | July 1982 | | July 1979 | |
|-----------------|------------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|
| | Share | Carrier | Share | Carrier | Share | Carrier | Share | Carrier | Share | Carrier | Share | Carrier |
| Cincinnati | 83.1 | DL | 81.1 | DL | 63.3 | DL | 34.0 | DL | 39.4 | DL | 31.5 | DL |
| Dayton | 74.8/77.0 | AL | 73.9 | PI | 64.6 | PI | 39.6 | PI | 21.7 | PI | 26.4 | TW |
| Baltimore | 69.2/74.2 | AL | 67.5 | PI | 52.3 | PI | 43.9 | PI | 38.4 | AL | 26.3 | AL |
| Raleigh/Durham | 71.7 | AA | 65.0 | AA | 35.9 | PI | 22.1 | FA | 22.3 | FA | 39.6 | FA |
| Nashville | 69.3 | AA | 63.5 | AA | 50.4 | AA | 18.3 | AL | 20.3 | AL | 17.7 | AA |
| Syracuse | 58.2/65.9 | AL | 59.4 | PI | 50.4 | PI | 40.4 | UR | 39.2 | UR | 42.0 | AL |
| Norfolk | 52.9/57.7 | AL | 45.2 | PI | 41.6 | PI | 44.0 | PI | 39.1 | PI | 55.9 | PI |
| El Paso | 56.4 | WN | 56.6 | WN | 50.9 | WN | 57.7 | WN | 32.1 | WN | 56.0 | CO |
| Rochester, NY | 35.9/56.5 | AL | 33.2 | AL | 35.1 | AL | 41.3 | AL | 46.5 | AL | 55.6 | AL |
| San Jose | 52.4 | AA | 37.2 | AA | 25.7 | OC | 23.7 | OC | 23.3 | OC | 26.4 | OC |
| Buffalo | 40.7/51.8 | AL | 39.9 | AL | 43.0 | AL | 53.5 | AL | 63.8 | AL | 60.9 | AL |
| Indianapolis | 41.0/47.3 | AL | 43.3 | AL | 26.7 | AL | 19.0 | AL | 22.1 | RU | 28.0 | AL |
| Sacramento | 46.5 | UA | 42.7 | UA | 38.3 | UA | 30.0 | OE | 19.7 | VB | 20.5 | PS |
| Jacksonville | 37.4/41.0 | AL | 37.0 | PI | 27.5 | PI | 25.5 | PT | 29.5 | EA | 36.7 | FA |
| Milwaukee | 40.7 | NW | 41.7 | NW | 15.5 | RC | 27.9 | RU | 42.9 | RC | 48.2 | NC |
| Portland | 37.8 | AS | 42.0 | AS | 42.8 | UA | 23.9 | OX | 21.9 | JT | 33.9 | UA |
| Cleveland | 37.4 | CO | 29.4 | CO | 14.2 | DL | 22.8 | UA | 17.6 | AL | 44.3 | UA |
| Austin | 29.7 | WN | 31.9 | WN | 35.1 | WN | 28.2 | WN | 39.1 | WN | 28.7 | WN |
| Reno | 28.3 | AA | 32.3 | AA | 17.7 | PS | 20.9 | UA | 29.2 | OC | 38.2 | UA |
| San Antonio | 27.5 | WN | 29.2 | WN | 28.5 | WN | 32.1 | WN | 25.0 | WN | 21.0 | EN |
| Ft. Myers | 27.0 | FA | 39.0 | FA | 26.6 | PT | 26.8 | PT | 27.1 | PT | 33.0 | FA |
| Hartford | 26.9 | DL | 25.8 | DL | 17.0 | DL | 16.3 | AL | 20.3 | AL | 28.2 | AL |
| Albuquerque | 26.7 | YV | 27.6 | WN | 23.6 | WN | 24.4 | WN | 15.4 | WN | 21.8 | TW |
| Tulsa | 26.2 | WN | 27.7 | WN | 25.8 | WN | 14.5 | WN | 16.9 | WN | 20.0 | AA |
| Oklahoma City | 25.2 | WN | 25.8 | WN | 22.8 | WN | 13.4 | WN | 15.4 | ZM | 28.2 | EN |
| Omaha | 25.0 | EN | 12.4 | HP | 15.6 | UA | 18.6 | JR | 14.0 | FL | 22.9 | UA |
| Ontario | 23.3 | AA | 20.1 | AA | 14.7 | UA | 17.5 | OC | 22.5 | OC | 22.7 | GW |
| Tucson | 23.0 | HP | 21.4 | HP | 17.7 | HP | 11.6 | FA | 21.3 | RC | 26.1 | RW |
| West Palm Beach | 21.7 | DL | 23.3 | DL | 23.0 | NY | 11.6 | GO | 22.7 | DL | 25.5 | DL |
| Columbus | 14.7/21.6 | DL/AL | 16.0 | DL | 18.3 | AL | 21.3 | AL | 25.7 | AL | 36.3 | TW |
| New Orleans | 21.1 | CO | 25.2 | CO | 15.8 | DL | 17.5 | DL | 20.3 | DL | 22.9 | DL |

SOURCE: Official Airline Guide, July 1 of each year except 1989 (March 1).

DOMINANT CARRIER AT EACH LARGE HUB
(Based on Departures and 1988 FAA Hub Classifications)

| Hub | March 1989 | | July 1988 | | July 1986 | | July 1984 | | July 1982 | | July 1979 | |
|----------------|------------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|
| | Share | Carrier | Share | Carrier | Share | Carrier | Share | Carrier | Share | Carrier | Share | Carrier |
| Charlotte | 92.5/93.0 | PI | 91.6 | PI | 73.2 | PI | 52.2 | PI | 44.2 | PI | 45.4 | EA |
| Pittsburgh | 85.4/84.5 | AL | 83.9 | AL | 83.2 | AL | 72.6 | AL | 63.9 | AL | 59.2 | AL |
| St. Louis | 83.1 | TW | 84.2 | TW | 45.2 | TW | 37.5 | TW | 36.9 | TW | 32.6 | TW |
| Memphis | 81.0 | NW | 82.9 | NW | 69.5 | RC | 38.5 | RC | 33.0 | RC | 31.4 | SO |
| Salt Lake City | 79.6 | DL | 77.5 | DL | 71.4 | WA | 55.2 | WA | 41.8 | WA | 28.8 | WA |
| Minneapolis | 76.6 | NW | 77.6 | NW | 46.2 | RC | 35.0 | RC | 33.7 | RC | 29.9 | NW |
| Detroit | 62.7 | NW | 63.8 | NW | 56.5 | RC | 26.1 | RC | 26.8 | RC | 24.0 | NC |
| Kansas City | 56.8 | EN | 44.7 | EN | 44.6 | EA | 22.5 | ZV | 21.0 | TW | 26.8 | EN |
| Atlanta | 55.0 | DL | 54.7 | DL | 49.0 | DL | 47.2 | DL | 41.1 | DL | 42.0 | DL |
| Houston | 55.0 | CO | 54.8 | CO | 31.6 | CO | 24.7 | CO | 19.5 | WN | 13.5 | WN |
| Dallas | 50.5 | AA | 49.0 | AA | 46.6 | AA | 32.5 | AA | 35.7 | AA | 25.2 | EN |
| Newark | 50.3 | CO | 47.6 | CO | 44.6 | PE | 33.8 | PE | 17.7 | PE | 21.5 | EA |
| Philadelphia | 47.6/52.5 | AL | 45.6 | AL | 45.6 | AL | 35.1 | AL | 35.6 | AL | 46.3 | AL |
| Denver | 45.1 | CO | 50.1 | CO | 31.4 | UA | 27.4 | UA | 21.8 | UA | 22.8 | FL |
| Phoenix | 38.2 | HP | 35.1 | HP | 32.7 | HP | 17.8 | RC | 21.6 | RC | 22.1 | FW |
| San Francisco | 37.7 | UA | 29.2 | UA | 30.4 | UA | 21.0 | UA | 16.4 | FN | 27.4 | UA |
| Las Vegas | 37.5 | HP | 32.2 | HP | 12.2 | HP | 15.7 | RC | 19.0 | RC | 16.4 | WA |
| Orlando | 37.1 | DL | 33.8 | DL | 18.9 | EA | 16.2 | EA | 26.9 | EA | 37.0 | EA |
| Chicago | 34.2 | UA | 32.4 | UA | 34.9 | UA | 30.1 | UA | 18.0 | UA | 24.0 | UA |
| Washington 1/ | 33.9 | UA | 22.4 | UA | 16.2 | NY | 11.9 | AL | 18.0 | AL | 18.6 | AL |
| Seattle | 33.4 | AS | 32.6 | AS | 25.3 | UA | 14.6 | UA | 12.9 | RC | 22.3 | UA |
| Miami | 25.5 | EA | 24.7 | EA | 22.9 | EA | 17.7 | EA | 24.9 | EA | 25.3 | EA |
| Tampa | 20.2/23.2 | DL/AL | 26.4 | EA | 17.8 | EA | 20.7 | PI | 23.9 | EA | 30.5 | EA |
| Boston | 21.7 | DL | 29.2 | EA | 23.6 | EA | 12.9 | DL | 15.9 | DL | 12.5 | DL |
| Los Angeles | 19.9 | AA | 19.4 | AA | 16.6 | PS | 13.9 | PS | 13.5 | PS | 13.2 | UA |
| New York 2/ | 19.1 | PA | 18.7 | PA | 13.6 | PA | 12.2 | PA | 14.6 | EA | 16.3 | EA |
| San Diego | 16.3/18.5 | DL/AL | 16.8 | DL | 19.3 | PS | 18.6 | PS | 22.9 | II | 20.6 | PS |

Table II.
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1/ Includes DCA and IAD.

2/ Includes JFK and LGA.

DOMINANT CARRIER AT EACH LARGE HUB
Based on Enplanements
(and 1988 FAA Hub Classifications)

| Hub | Calendar 1988 | | Calendar 1984 | | Calendar 1979 | |
|---------------------------|---------------|---------|---------------|---------|---------------|---------|
| | Share | Carrier | Share | Carrier | Share | Carrier |
| Charlotte | 90.9% | PI | 74.5% | PI | 73.1% | EA |
| Pittsburgh | 85.5 | AL | 77.2 | AL | 50.6 | AL |
| Memphis | 85.5 | NW | 46.7 | RC | 41.8 | DL |
| St. Louis | 82.4 | TW | 57.5 | TW | 43.5 | TW |
| Salt Lake City | 80.2 | DL | 70.6 | WA | 42.9 | WA |
| Minneapolis/ St. Paul | 78.3 | NW | 47.8 | NW | 40.2 | NW |
| Detroit | 59.4 | NW | 29.1 | RC | 20.2 | AA |
| Atlanta | 58.4 | DL | 52.6 | DL | 50.3 | DL |
| Dallas | 56.0 | AA | 50.4 | AA | 35.1 | BN |
| Houston | 51.9 | CO | 28.9 | CO | 17.2 | TI |
| Chicago | 45.1 | UA | 43.5 | UA | 28.3 | UA |
| Denver | 44.4 | UA | 40.0 | UA | 26.7 | UA |
| Phoenix | 44.1 | HP | 18.6 | RC | 25.6 | AA |
| Newark | 41.9 | CO | 48.6 | PE | 32.8 | EA |
| Miami/ Ft. Lauderdale | 37.9 | EA | 43.7 | EA | 40.1 | EA |
| Philadelphia | 36.6 | AL | 23.7 | AL | 23.5 | EA |
| Las Vegas | 33.7 | HP | 16.0 | UA | 23.3 | WA |
| San Francisco/ Oakland | 31.8 | UA | 32.3 | UA | 27.4 | UA |
| Kansas City | 27.0 | BN | 20.3 | EA | 32.8 | TW |
| Orlando | 26.8 | DL | 26.2 | EA | 45.5 | EA |
| Seattle | 26.2 | UA | 26.2 | UA | 27.9 | UA |
| Washington 1/ | 23.1 | UA | 20.2 | EA | 25.3 | EA |
| Tampa/St. Pete | 20.1 | EA | 22.6 | DL | 33.6 | EA |
| New York 2/ | 18.7 | PA | 20.9 | EA | 25.0 | EA |
| Boston | 17.5 | DL | 20.7 | EA | 24.0 | DL |
| Los Angeles | 16.7 | AA | 17.5 | UA | 17.0 | PS |
| San Diego | 16.7 | AL | 26.4 | PS | 30.9 | PS |

1/ Includes DCA and IAD.

2/ Includes LGA and JFK.

SOURCE: Form 41, T-3.

Table II-10
Page 2 of 2

DOMINANT CARRIER AT EACH MEDIUM HUB
Based on Enplanements
(and 1988 FAA Hub Classifications)

| Hub | Calendar 1988 | | Calendar 1984 | | Calendar 1979 | |
|-----------------|---------------|---------|---------------|---------|---------------|---------|
| | Share | Carrier | Share | Carrier | Share | Carrier |
| Cincinnati | 78.0% | DL | 55.7% | DL | 36.9% | DL |
| Dayton | 74.7 | PI | 61.8 | PI | 35.5 | TW |
| Raleigh/Durham | 68.4 | AA | 27.4 | PI | 61.5 | EA |
| Nashville | 62.7 | AA | 21.9 | AA | 27.2 | AA |
| Baltimore | 57.4 | PI | 33.0 | PI | 24.6 | EA |
| El Paso | 53.3 | WN | 60.1 | WN | 58.8 | CO |
| Syracuse | 47.5 | PI | 28.7 | AL | 37.9 | AL |
| Buffalo | 45.2 | AL | 44.3 | AL | 53.8 | AL |
| Norfolk | 43.0 | PI | 45.3 | PI | 43.4 | PI |
| Rochester, NY | 42.5 | AL | 51.5 | AL | 43.6 | AL |
| San Jose | 41.0 | AA | 28.1 | OC | 37.2 | PS |
| Milwaukee | 40.7 | NW | 39.3 | RC | 22.9 | RC |
| Austin | 36.4 | WN | 34.3 | WN | 39.9 | BN |
| Indianapolis | 33.6 | AL | 24.1 | AL | 23.5 | TW |
| Albuquerque | 32.2 | WN | 33.4 | WN | 32.8 | TW |
| San Antonio | 31.4 | WN | 37.3 | WN | 34.8 | BN |
| West Palm Beach | 30.8 | DL | 26.0 | DL | 36.5 | DL |
| Reno | 30.7 | AA | 28.6 | UA | 44.1 | UA |
| Tulsa | 29.7 | AA | 21.1 | AA | 27.7 | BN |
| Sacramento | 28.8 | UA | 26.1 | PS | 41.1 | PS |
| Omaha | 28.7 | UA | 27.4 | UA | 31.9 | UA |
| Ontario | 27.5 | AA | 24.9 | OC | 24.2 | OC |
| Oklahoma City | 26.1 | AA | 21.6 | AA | 39.8 | BN |
| Jacksonville | 26.1 | PI | 27.2 | DL | 42.0 | DL |
| Tucson | 25.7 | HP | 14.9 | AA | 35.2 | AA |
| Cleveland | 25.2 | AL | 40.7 | UA | 47.8 | UA |
| Portland | 24.4 | AL | 32.8 | UA | 43.5 | UA |
| New Orleans | 22.5 | CO | 27.4 | DL | 38.7 | DL |
| Columbus | 21.2 | AL | 22.3 | PE | 42.2 | TW |
| Ft. Myers | 20.0 | DL | 36.9 | EA | 75.7 | EA |
| Hartford | 18.9 | DL | 20.4 | AL | 30.0 | AL |

SOURCE: Form 41, T-3.

TWO-CARRIER DEPARTURE SHARES AT
LARGE AND MEDIUM HUBS

Table II-11

Objective: To study changes in the degree of two-carrier concentration, which is a measure of competitiveness.

Data Sources: Two-carrier shares were measured in terms of departures taken from Official Airline Guide tapes. These shares, therefore, include departures of code-sharing affiliates. The basic assumptions used here are that code-shares contribute to the major carriers' dominance and that departures can be used as a proxy for traffic.

Observations/Interpretation: Large Hubs: The change in concentration is almost as intense as the increase in single-carrier concentration. There was little change from 1979 to 1984, but two-carrier concentration has increased dramatically since.

- * Now, two carriers control 50 percent or more of departures at all but seven of the 27 large hubs, and control 75 percent or more of departures at 10 large hubs.
- * In 1979, by contrast, two carriers controlled 50 percent or more of departures at only 9 hubs, and 75 percent or more of departures at only 2 hubs.
- * The two-carrier share at four hubs -- Atlanta, Denver, Dallas, and Houston -- reflects the presence of competing hub carriers.

Medium hubs: As with single-carrier concentration, two-carrier concentration at medium hubs declined significantly between 1979 and 1984, but has increased sharply since. Although less intense than at large hubs, two-carrier concentration is still high. Two-carriers account for 50 percent or more of departures at 19 of the 31 medium hubs.

Although the two-carrier share at medium hubs is not greatly different than in 1979, the following table reveals that concentration is much less evenly balanced between the two carriers than in 1979.

TWO CARRIER DEPARTURE SHARES AT LARGE HUBS
(Based on 1988 FAA Hub Classifications)

| Two-Carrier Share | | | | | |
|-------------------|-------|------------|-------|------------|-------|
| March, 1989 | | July, 1984 | | July, 1979 | |
| Hub | Share | Hub | Share | Hub | Share |
| CLT | 95.3% | ATL | 84.1% | ATL | 80.5% |
| ATL | 91.6 | PIT | 78.8 | PIT | 73.2 |
| MEM | 88.8 | CLT | 70.5 | CLT | 61.9 |
| PIT | 87.6 | SLC | 68.5 | PHL | 58.5 |
| STL | 87.3 | MSP | 66.9 | MEM | 56.4 |
| DEN | 84.0 | STL | 64.0 | MSP | 56.1 |
| SLC | 83.9 | MEM | 61.1 | STL | 54.4 |
| DFW | 80.9 | DFW | 53.7 | ORL | 51.3 |
| MSP | 80.8 | DEN | 52.5 | TPA | 49.9 |
| HOU | 75.1 | CHI | 45.9 | DFW | 45.6 |
| EWB | 69.6 | PHL | 45.4 | MCI | 45.2 |
| DTW | 69.4 | EWB | 41.8 | SLC | 42.3 |
| PHL | 66.6 | HOU | 41.1 | DEN | 41.7 |
| CHI | 65.1 | MCI | 36.5 | SFC | 40.5 |
| MCI | 63.2 | DTW | 36.3 | PHX | 40.3 |
| SEA | 60.1 | TPA | 36.1 | MIA | 39.8 |
| PHX | 59.9 | PHX | 34.9 | CHI | 39.7 |
| SFO | 56.7 | SFO | 34.2 | SAN | 39.2 |
| ORL | 55.6 | SAN | 29.2 | EWB | 39.0 |
| WAS ^{1/} | 53.6 | ORL | 28.8 | DTW | 38.1 |
| LAS | 49.7 | SEA | 27.8 | WAS | 34.9 |
| BOS | 43.0 | LAS | 26.6 | SEA | 33.1 |
| TPA | 42.1 | MIA | 26.4 | LAS | 32.8 |
| MIA | 37.4 | LAX | 23.8 | NYC | 31.7 |
| LAX | 36.5 | WAS | 23.6 | HOU | 26.8 |
| SAN | 34.9 | NYC | 22.8 | LAX | 26.1 |
| NYC ^{2/} | 33.2 | BOS | 22.2 | BOS | 23.0 |

Summary Comparisons

| Two Carrier Share | Number of Points | | | Cumulative Totals | | |
|-------------------|------------------|-----------|-----------|-------------------|-----------|-----------|
| | March 1989 | July 1984 | July 1979 | March 1989 | July 1984 | July 1979 |
| 90% or more | 2 | 0 | 0 | 2 | 0 | 0 |
| 80-89.9 | 7 | 1 | 1 | 9 | 1 | 1 |
| 70-79.9 | 1 | 2 | 1 | 10 | 3 | 2 |
| 60-69.9 | 6 | 4 | 1 | 16 | 7 | 3 |
| 50-59.9 | 4 | 2 | 5 | 20 | 9 | 8 |
| 40-49.9 | 3 | 4 | 7 | 23 | 13 | 15 |
| 30-39.9 | 4 | 5 | 9 | 27 | 18 | 24 |
| 20-29.9 | 0 | 9 | 3 | | 27 | 27 |

^{1/} Includes DCA and IAD.

^{2/} Includes LGA and JFK.

SOURCE: Official Airline Guide, March 1, 1989 and July 1, 1984 and 1979.

TWO CARRIER DEPARTURE SHARES AT MEDIUM HUBS
(Based on 1988 FAA Hub Classifications)

| March, 1989 | | July, 1984 | | July, 1979 | |
|------------------|-------|------------|-------|------------|-------|
| Hub | Share | Hub | Share | Hub | Share |
| Cincinnati | 86.2% | ELP | 69.6% | ORF | 85.5% |
| Raleigh/Durham | 86.1 | BUF | 66.9 | ROC | 78.5 |
| Dayton | 85.0 | ROC | 61.6 | ELP | 78.1 |
| Baltimore | 78.0 | SYR | 60.5 | BUF | 75.7 |
| Nashville | 76.8 | ORF | 59.5 | MKE | 67.6 |
| Syracuse | 73.7 | BWI | 58.2 | FMY | 62.9 |
| El Paso | 70.4 | CVG | 58.0 | SYR | 60.6 |
| Norfolk | 68.5 | DAY | 54.9 | JAX | 58.7 |
| Rochester, NY | 66.2 | JAX | 49.1 | CLE | 57.1 |
| San Jose | 65.6 | FMY | 44.2 | CMH | 55.6 |
| Sacramento | 65.3 | SAT | 44.1 | RDU | 54.3 |
| Portland | 65.0 | SMF | 43.6 | RNO | 51.8 |
| Cleveland | 64.9 | MKE | 43.3 | BWI | 51.6 |
| Buffalo | 62.9 | SJC | 43.3 | PDX | 51.4 |
| Jacksonville, FL | 60.2 | RNO | 41.5 | OKC | 48.1 |
| Indianapolis, IN | 57.4 | AUS | 41.4 | AUS | 47.2 |
| Milwaukee | 57.1 | RDU | 40.3 | CVG | 47.0 |
| Austin | 51.3 | PDX | 38.1 | DAY | 46.9 |
| Albuquerque | 51.1 | ABQ | 36.5 | SJC | 46.8 |
| Reno | 49.9 | CLE | 35.4 | PBI | 45.9 |
| Oklahoma City | 48.4 | IND | 34.1 | IND | 45.6 |
| Tulsa | 45.5 | CMH | 34.0 | OMA | 45.1 |
| San Antonio | 44.9 | BNA | 33.6 | TUS | 43.6 |
| Hartford | 43.2 | MSY | 31.0 | BDL | 43.1 |
| West Palm Beach | 42.9 | ONT | 29.0 | SMF | 39.8 |
| Ontario | 41.8 | OMA | 28.4 | TUL | 38.6 |
| New Orleans | 40.0 | BDL | 27.8 | ABQ | 38.4 |
| Ft. Myers | 39.9 | TUL | 26.1 | ONT | 37.8 |
| Omaha | 38.7 | OKC | 23.4 | SAT | 37.7 |
| Tucson | 37.0 | PBI | 22.1 | MSY | 36.3 |
| Columbus | 36.4 | TUS | 21.5 | BNA | 33.1 |

Summary Comparisons

| Two Carrier Share | Number of Points | | | Cumulative Totals | | |
|----------------------|------------------|--------------|--------------|-------------------|--------------|--------------|
| | March 1989 | July 1984 | July 1979 | March 1989 | July 1984 | July 1979 |
| 90% or more | 0 | 0 | 0 | 0 | 0 | 0 |
| 80.0-89.9 | 3 | 0 | 1 | 3 | 0 | 1 |
| 70.0-79.9 | 4 | 0 | 3 | 7 | 0 | 4 |
| 60.0-69.9 | 8 | 4 | 3 | 15 | 4 | 7 |
| 50.0-59.9 | 4 | 4 | 7 | 19 | 8 | 14 |
| 40.0-49.9 | 8 | 9 | 10 | 27 | 17 | 24 |
| 30.0-39.9 | 4 | 7 | 7 | 31 | 24 | 31 |
| 20.0-29.9 | 0 | 7 | 0 | | 31 | |

SOURCE: Official Airline Guide, March 1, and July 1, 1984, and 1979.

TWO-CARRIER ENPLANEMENT SHARES AT
LARGE AND MEDIUM HUBS

Table II-11a

Objective: To study changes in the degree of two-carrier concentration.

Data Sources: Two-carrier shares were measured in terms of enplanements taken from the Form 41, Schedule T-3. Since these include enplanements only for certificated carriers, the traffic for most code-sharing commuter affiliates at the various hubs are not included. To the extent such carriers tend to increase the hub carriers' dominance at concentrated hubs, this provides a conservative picture of hub concentration.

Observation Interpretations:

Large Hubs: The data show pronounced increases in two-carrier enplanement shares both in 1984 compared with 1979, and in 1988 compared with 1984. The major carriers, exclusive of most code-sharing affiliates, control 50 percent or more of enplanements at more than half of the large hubs (15 of 27), and control 75 percent or more of departures at 10 large hubs. In 1979, 75 percent or more of the traffic was controlled by two carriers at only two hubs. Florida points were among the more concentrated in 1979, but are among the least concentrated in 1988.

Medium Hubs: Two-carrier concentration declined greatly from 1979 to 1984 and has increased since. Two carriers account for 50 percent or more of the enplanements at 18 of the 31 medium hubs.

TWO-CARRIER ENPLANEMENT SHARES AT LARGE HUBS
(Based on 1989 FAA Hub Classifications)

| Calendar 1988 | | Two-Carrier Share | | Calendar 1979 | |
|-------------------|-------|-------------------|-------|-------------------|-------|
| Hub | Share | Hub | Share | Hub | Share |
| ATL | 93.0% | CLT | 93.1% | ATL | 90.3% |
| CLT | 93.0 | ATL | 92.8 | CLT | 85.5 |
| MEM | 91.6 | STL | 85.4 | ORL | 70.9 |
| PIT | 88.2 | PIT | 84.0 | PIT | 68.7 |
| SLC | 86.0 | MEM | 82.3 | DFW | 65.7 |
| STL | 85.9 | MSP | 79.3 | TPA | 64.7 |
| DEN | 85.0 | SLC | 78.8 | MCI | 64.6 |
| MSP | 83.5 | DFW | 68.3 | MIA | 63.0 |
| DFW | 79.0 | CHI | 67.5 | SLC | 60.8 |
| HOU | 76.3 | DEN | 65.0 | STL | 59.2 |
| CHI | 71.5 | MIA | 60.7 | MSP | 54.8 |
| DTW | 66.9 | EWR | 58.9 | MEM | 54.1 |
| PHX | 63.2 | HOU | 51.2 | SAN | 51.6 |
| PHL | 53.5 | SFO | 48.0 | CHI | 49.6 |
| EWR | 53.2 | ORL | 46.3 | DEN | 49.6 |
| MIA | 52.8 | PHL | 44.6 | NYC ^{2/} | 48.5 |
| MCI | 49.4 | TPA | 44.1 | SEA | 48.2 |
| SFO | 45.3 | SAN | 42.8 | BOS | 47.9 |
| SEA | 45.1 | SEA | 42.2 | EWR | 47.4 |
| LAS | 44.3 | DTW | 40.4 | SFO | 46.2 |
| ORL | 41.3 | BOS | 39.5 | PHL | 45.3 |
| TPA | 39.3 | MCI | 39.4 | PHX | 44.7 |
| WAS ^{1/} | 37.5 | PHX | 37.0 | DTW | 39.6 |
| NYC ^{2/} | 35.5 | NYC ^{2/} | 36.5 | LAS | 39.4 |
| BOS | 33.9 | LAX | 32.7 | WAS ^{1/} | 37.2 |
| LAX | 31.6 | LAS | 30.9 | LAX | 33.8 |
| SAN | 30.4 | WAS ^{1/} | 30.5 | HOU | 33.4 |

Summary Comparisons

| Two-Carrier Share | Number of Points | | | Cumulative Totals | | |
|-------------------|------------------|---------------|---------------|-------------------|---------------|---------------|
| | Calendar 1988 | Calendar 1984 | Calendar 1979 | Calendar 1988 | Calendar 1984 | Calendar 1979 |
| 90% or more | 3 | 2 | 1 | 3 | 2 | 1 |
| 80-89.9 | 5 | 3 | 1 | 8 | 5 | 2 |
| 70-79.9 | 3 | 2 | 1 | 11 | 7 | 3 |
| 60-69.9 | 2 | 4 | 6 | 13 | 11 | 9 |
| 50-59.9 | 3 | 2 | 4 | 16 | 13 | 13 |
| 40-49.9 | 5 | 7 | 9 | 21 | 20 | 22 |
| 30-39.9 | 6 | 7 | 5 | 27 | 27 | 27 |

^{1/} Includes DCA and IAD.

^{2/} Includes LGA and JFK.

SOURCE: Form 41, Schedule T-3.

TWO-CARRIER ENPLANEMENT SHARES AT MEDIUM HUBS
(Based on 1989 FAA Hub Classifications)

| Two-Carrier Share | | | | | |
|-------------------|-------|---------------|-------|---------------|-------|
| Calendar 1988 | | Calendar 1984 | | Calendar 1979 | |
| Hub | Share | Hub | Share | Hub | Share |
| CVG | 81.9% | ELP | 82.0% | FMY | 98.1% |
| DAY | 80.9 | DAY | 73.4 | ELP | 91.7 |
| RDU | 80.3 | BUF | 71.4 | ROC | 80.4 |
| ELP | 73.1 | CVG | 65.8 | RDU | 79.9 |
| BNA | 70.7 | ROC | 65.6 | BUF | 79.0 |
| BWI | 64.9 | MKE | 62.2 | JAX | 77.2 |
| SYR | 63.4 | ORF | 62.2 | SYR | 72.4 |
| AUS | 59.5 | FMY | 60.4 | ORF | 67.5 |
| BUF | 59.4 | AUS | 56.3 | PBI | 67.3 |
| ROC | 58.3 | SAT | 56.2 | OKC | 63.9 |
| TUL | 55.7 | SJC | 55.2 | CVG | 63.4 |
| ORF | 55.6 | JAX | 54.0 | SJC | 63.4 |
| SJC | 54.9 | SYR | 52.7 | CMH | 62.4 |
| SMF | 53.1 | RDU | 51.7 | CLE | 61.9 |
| SAT | 52.9 | CLE | 49.8 | DAY | 61.8 |
| MKE | 51.8 | PBI | 48.7 | ABQ | 61.4 |
| PBI | 51.4 | RNO | 48.2 | AUS | 60.3 |
| OKC | 50.2 | BWI | 46.3 | SMF | 59.4 |
| CLE | 49.6 | SMF | 46.0 | PDX | 58.9 |
| JAX | 49.6 | ABQ | 43.8 | RNO | 57.5 |
| RNO | 48.2 | PDX | 43.7 | TUS | 56.7 |
| ONT | 47.0 | OKC | 42.7 | TUL | 55.1 |
| ABQ | 45.7 | CMH | 42.0 | MSY | 55.0 |
| MSY | 44.8 | MSY | 41.7 | SAT | 52.6 |
| IND | 44.2 | ONT | 42.7 | OMA | 49.0 |
| TUS | 43.5 | TUL | 40.8 | BDL | 47.0 |
| OMA | 42.4 | IND | 39.4 | BWI | 46.8 |
| PDX | 41.6 | BDL | 38.8 | MKE | 45.5 |
| BDL | 36.0 | BNA | 38.2 | IND | 45.2 |
| CMH | 35.8 | OMA | 37.9 | ONT | 41.8 |
| FMY | 35.0 | TUS | 28.3 | BNA | 41.2 |

Summary Comparisons

| Two-Carrier Share | Number of Points | | | Cumulative Totals | | |
|----------------------|------------------|------------------|------------------|-------------------|------------------|------------------|
| | Calendar 1988 | Calendar 1984 | Calendar 1979 | Calendar 1988 | Calendar 1984 | Calendar 1979 |
| 90% or more | - | - | 2 | - | - | 2 |
| 80-89.9 | 3 | 1 | 1 | 3 | 1 | 3 |
| 70-79.9 | 2 | 2 | 4 | 5 | 3 | 7 |
| 60-69.9 | 2 | 5 | 10 | 7 | 8 | 17 |
| 50-59.9 | 11 | 6 | 7 | 18 | 14 | 24 |
| 40-49.9 | 10 | 12 | 7 | 28 | 26 | 31 |
| 30-39.9 | 3 | 4 | - | 31 | 30 | - |
| 20-29.9 | - | 1 | - | - | 31 | - |

SOURCE: Form 41, Schedule T-3.

DIFFERENCE BETWEEN DOMINANT CARRIER
AND SECOND DOMINANT CARRIER
DEPARTURE SHARES AT
LARGE AND MEDIUM HUBS.

Table II-12

Objective

To evaluate the competitive relationship between the most dominant carrier at each hub with its largest competitor.

Data Sources: Departures taken from Official Airline Guide tapes.

Observations/Interpretation: Large Hubs: The difference in share changed very little between 1979 and 1984 but the spread has grown rapidly since. In 1979 the spread was greater than 15 percentage points (not percent) at only four hubs. That spread is now exceeded in 20 of the 27 large hubs.

The increase in spread means different things for different hubs. For hubs like Charlotte, this tends to dramatize the amount of new service added by Piedmont. At hubs like St. Louis, this is more of a true indicator of concentration because many city pairs are now monopolies as the result of loss of competing service rather than the result of new service.

This increase in spread between the top two carriers reflects the fact, illustrated in later tables, that at concentrated hubs competition is largely limited to service to other connecting hubs by the other hubbing carriers.

Medium Hubs: As seen with other measures of concentration, the difference in shares of the top two carriers at medium hubs decreased from 1979 to 1984 then increased sharply by 1988. This, primarily, reflects the development of connecting-hub complexes at several medium hubs.

DIFFERENCE BETWEEN DOMINANT CARRIER AND SECOND
DOMINANT CARRIER DEPARTURE SHARE AT MEDIUM HUBS
(Based on 1988 FAA Hub Classifications)

| March, 1989 | | July, 1984 | | July, 1979 | |
|------------------|---------------------------------|------------|---------------------------------|------------|---------------------------------|
| Hub | Difference (Percentage Pts.) | Hub | Difference (Percentage Pts.) | Hub | Difference (Percentage Pts.) |
| Cincinnati | 80.0 | ELP | 45.8 | BUF | 46.1 |
| Baltimore | 70.4 | BUF | 40.1 | ELP | 33.9 |
| Dayton | 69.0 | BWI | 29.6 | ROC | 32.7 |
| Nashville | 61.8 | ORF | 28.5 | CLE | 31.5 |
| Syracuse | 58.1 | DAY | 24.3 | MKE | 28.8 |
| Raleigh/Durham | 57.3 | ROC | 21.0 | ORF | 26.3 |
| Norfolk | 46.9 | SYR | 20.3 | RDU | 24.9 |
| Rochester, NY | 46.8 | SAT | 20.1 | RNO | 24.6 |
| El Paso | 42.4 | SMF | 16.4 | SYR | 23.4 |
| Buffalo | 40.7 | AUS | 15.0 | BWI | 21.0 |
| San Jose | 39.2 | MKE | 12.5 | CMH | 17.0 |
| Indianapolis, IN | 37.2 | ABQ | 12.3 | PDX | 16.4 |
| Sacramento | 27.7 | CLE | 10.2 | CVG | 16.0 |
| Milwaukee | 24.3 | CVG | 10.0 | JAX | 14.7 |
| Jacksonville | 21.8 | PDX | 9.7 | BDL | 13.3 |
| Ft. Myers | 14.1 | FMY | 9.4 | IND | 10.4 |
| Omaha | 11.3 | CMH | 8.6 | AUS | 10.2 |
| Hartford | 10.6 | OMA | 8.6 | MSY | 9.5 |
| Portland | 10.6 | ONT | 6.0 | TUS | 8.6 |
| San Antonio | 10.1 | BDL | 4.8 | OKC | 8.3 |
| Cleveland | 9.9 | SJC | 4.1 | ONT | 7.6 |
| Tucson | 9.0 | MSY | 4.0 | SJC | 6.0 |
| Austin | 8.1 | IND | 3.9 | DAY | 5.9 |
| Tulsa | 6.9 | RDU | 3.9 | ABQ | 5.1 |
| Columbus | 6.8 | OKC | 3.4 | PBI | 5.1 |
| Reno | 6.7 | BNA | 3.0 | FMY | 4.7 |
| Ontario | 4.8 | TUL | 2.9 | SAT | 4.3 |
| Albuquerque | 2.3 | JAX | 1.9 | TUL | 2.9 |
| New Orleans | 2.2 | TUS | 1.7 | BNA | 2.3 |
| Oklahoma City | 2.0 | PBI | 1.1 | SMF | 1.2 |
| West Palm Beach | 0.5 | RNO | 0.3 | OMA | 0.7 |

Summary Comparisons

| Difference | Number of Points | | | Cumulative Totals | | |
|-------------|------------------|--------------|--------------|-------------------|--------------|--------------|
| | March 1989 | July 1984 | July 1979 | March 1989 | July 1984 | July 1979 |
| 0- 4.9% | 5 | 12 | 6 | 5 | 12 | 6 |
| 5.0- 9.9 | 6 | 5 | 8 | 11 | 17 | 14 |
| 10.0-14.9 | 5 | 4 | 4 | 16 | 21 | 18 |
| 15.0-19.9 | 0 | 2 | 3 | 16 | 23 | 21 |
| 20.0-29.9 | 3 | 6 | 6 | 19 | 29 | 27 |
| 30.0-39.9 | 2 | 0 | 3 | 21 | 29 | 30 |
| 40.0-49.9 | 4 | 2 | 1 | 25 | 31 | 31 |
| 50.0-59.9 | 2 | | | 27 | | |
| 60.0-69.9 | 2 | | | 29 | | |
| 70.0-79.9 | 1 | | | 30 | | |
| 80.0-89.9 | 1 | | | 31 | | |
| 90% or more | | | | | | |

SOURCE: Official Airline Guide, March 1, and July 1, 1984 and 1979.

DIFFERENCE BETWEEN DOMINANT CARRIER AND SECOND
DOMINANT CARRIER DEPARTURE SHARE AT LARGE HUBS
(Based on 1988 FAA Hub Classifications)

| Spread Between Dominant and Second Dominant Carriers | | | | | |
|---|---------------------------------|------------|---------------------------------|------------|---------------------------------|
| March, 1989 | | July, 1984 | | July, 1979 | |
| Hub | Difference (Percentage Pts.) | Hub | Difference (Percentage Pts.) | Hub | Difference (Percentage Pts.) |
| CLT | 90.7 | PIT | 66.4 | PIT | 45.2 |
| PIT | 83.2 | SLC | 41.9 | PHL | 34.1 |
| STL | 78.9 | CLT | 33.9 | CLT | 28.9 |
| SLC | 75.3 | EWB | 25.8 | ORL | 22.7 |
| MEM | 73.2 | PHL | 24.8 | SLC | 15.3 |
| MSP | 72.4 | DTW | 15.9 | SFO | 14.3 |
| DTW | 56.0 | MEM | 15.9 | SEA | 11.5 |
| MCI | 50.4 | CHI | 14.3 | TPA | 11.1 |
| PHL | 38.4 | DFW | 11.3 | MIA | 10.8 |
| HOU | 34.9 | STL | 11.0 | STL | 10.8 |
| EWB | 31.0 | ATL | 10.3 | DTW | 9.9 |
| WAS | 25.3 | MIA | 9.0 | MCI | 8.4 |
| DFW | 20.1 | MCI | 8.5 | CHI | 8.3 |
| SFO | 18.7 | HOU | 8.3 | MEM | 6.4 |
| OAL | 18.6 | SAN | 8.0 | DFW | 4.8 |
| ATL | 18.4 | SFO | 7.8 | EWB | 4.0 |
| PHX | 16.5 | TPA | 5.3 | DEN | 3.9 |
| WAS | 14.2 | LAS | 4.8 | PHX | 3.9 |
| MIA | 13.6 | LAX | 4.0 | MSP | 3.7 |
| SEA | 6.7 | BOS | 3.6 | ATL | 3.5 |
| DEN | 6.2 | ORL | 3.6 | WAS | 2.3 |
| NYC | 5.0 | MSP | 3.1 | BOS | 2.0 |
| TPA | 4.3 | DEN | 2.3 | SAN | 2.0 |
| CHI | 3.3 | NYC | 1.6 | NYC | 0.9 |
| LAX | 3.3 | SEA | 1.4 | LAX | 0.3 |
| SAN | 2.1 | PHX | 0.7 | HOU | 0.2 |
| BOS | 0.4 | WAS | 0.2 | LAS | 0.0 |

Summary Comparisons

| Difference | Number of Points | | | Cumulative Totals | | |
|-------------|------------------|--------------|--------------|-------------------|--------------|--------------|
| | March 1989 | July 1984 | July 1979 | March 1989 | July 1984 | July 1979 |
| 0- 4.9% | 5 | 10 | 13 | 5 | 10 | 13 |
| 5.0- 9.9 | 3 | 6 | 4 | 8 | 16 | 17 |
| 10.0-14.9 | 2 | 4 | 5 | 10 | 20 | 22 |
| 15.0-19.9 | 4 | 2 | 1 | 14 | 22 | 23 |
| 20.0-29.9 | 2 | 2 | 2 | 16 | 24 | 25 |
| 30.0-39.9 | 3 | 1 | 1 | 19 | 25 | 26 |
| 40.0-49.9 | 0 | 1 | 1 | 19 | 26 | 27 |
| 50.0-59.9 | 2 | 0 | 0 | 21 | 26 | |
| 60.0-69.9 | 0 | 1 | 0 | 21 | 27 | |
| 70.0-79.9 | 4 | 0 | 0 | 25 | | |
| 80.0-89.9 | 1 | 0 | 0 | 26 | | |
| 90% or more | 1 | 0 | 0 | 27 | | |

SOURCE: Official Airline Guide, March 1, 1989 and July 1, 1984 and 1979.

DIFFERENCE BETWEEN DOMINANT CARRIER
AND SECOND DOMINANT CARRIER
ENPLANEMENT SHARES AT
LARGE AND MEDIUM HUBS

Table II-12a

Objective: To evaluate the competitive relationship between the most dominant carrier at each hub with its largest competitor, exclusive of commuter code-sharing affiliates.

Data Source: Form 41, Schedule T-3.

Observations/Interpretations: See comments under Table II-11a.

DIFFERENCE BETWEEN DOMINANT CARRIER AND SECOND
DOMINANT CARRIER ENPLANEMENT SHARES AT LARGE HUBS
(Based on 1989 FAA Hub Classifications)

| Calendar 1988 | | Spread Between Dominant and Second Dominant Carriers Calendar 1984 | | Calendar 1979 | |
|---------------|---------------------------------|--|---------------------------------|---------------|---------------------------------|
| Hub | Difference (Percentage Pts.) | Hub | Difference (Percentage Pts.) | Hub | Difference (Percentage Pts.) |
| CLT | 88.8 | PIT | 70.4 | CLT | 60.7 |
| PIT | 82.8 | SLC | 62.4 | PIT | 32.5 |
| MEM | 79.4 | CLT | 55.9 | MEM | 29.5 |
| STL | 78.9 | EWR | 38.3 | STL | 27.8 |
| SLC | 74.4 | DFW | 32.5 | MCI | 26.4 |
| MSP | 73.1 | STL | 29.6 | MSP | 25.6 |
| DTW | 51.9 | MIA | 26.7 | SLC | 25.0 |
| DFW | 33.0 | CHI | 19.5 | ORL | 20.1 |
| EWR | 30.6 | DTW | 17.8 | EWR | 18.2 |
| HOU | 27.5 | SFO | 16.6 | MIA | 17.2 |
| PHX | 25.0 | MSP | 16.3 | WAS | 13.4 |
| ATL | 23.8 | DEN | 15.0 | ATL | 10.3 |
| LAS | 23.1 | ATL | 12.4 | SAN | 10.2 |
| MIA | 23.0 | MEM | 11.1 | SFO | 8.6 |
| PHL | 19.7 | SEA | 10.2 | SEA | 7.6 |
| CHI | 18.7 | SAN | 10.0 | LAS | 7.2 |
| SFO | 18.3 | WAS | 9.9 | CHI | 7.0 |
| ORL | 12.3 | HOU | 6.6 | PHX | 6.5 |
| WAS | 8.7 | ORL | 6.1 | DFW | 4.5 |
| SEA | 7.3 | NYC | 5.3 | DEN | 3.8 |
| MCI | 4.6 | PHL | 2.8 | TPA | 2.5 |
| DEN | 3.8 | LAX | 2.3 | PHL | 1.7 |
| SAN | 3.0 | BOS | 1.9 | NYC | 1.5 |
| NYC | 1.9 | MCI | 1.2 | HOU | 1.0 |
| LAX | 1.8 | LAS | 1.1 | DTW | 0.8 |
| BOS | 1.1 | TPA | 1.1 | LAX | 0.2 |
| TPA | 0.9 | PHX | 0.2 | BOS | 0.1 |

Summary Comparisons

| Difference | Number of Points | | | Cumulative Totals | | |
|-------------|------------------|------------------|------------------|-------------------|------------------|------------------|
| | Calendar 1988 | Calendar 1984 | Calendar 1979 | Calendar 1988 | Calendar 1984 | Calendar 1979 |
| 0-4.9% | 7 | 7 | 9 | 7 | 7 | 9 |
| 5.0-9.9 | 2 | 4 | 5 | 9 | 11 | 14 |
| 10.0-14.9 | 1 | 4 | 3 | 10 | 15 | 17 |
| 15.0-19.9 | 3 | 5 | 2 | 13 | 20 | 19 |
| 20.0-29.9 | 5 | 2 | 6 | 18 | 22 | 25 |
| 30.0-39.9 | 2 | 2 | 1 | 20 | 24 | 26 |
| 40.0-49.9 | - | - | - | 20 | 24 | 26 |
| 50.0-59.9 | 1 | 1 | - | 21 | 25 | 26 |
| 60.0-69.9 | - | 1 | 1 | 21 | 26 | 27 |
| 70.0-79.9 | 4 | 1 | - | 25 | 27 | |
| 80.0-89.9 | 2 | - | - | 27 | | |
| 90% or more | - | - | - | | | |

SOURCE: Form 41, Schedule T-3.

DIFFERENCE BETWEEN DOMINANT CARRIER AND SECOND
DOMINANT CARRIER ENPLANEMENT SHARES AT MEDIUM HUBS
(Based on 1989 FAA Hub Classifications)

| Spread Between Dominant and Second Dominant Carriers | | | | | |
|---|---------------------------------|---------------|---------------------------------|---------------|---------------------------------|
| Calendar 1988 | | Calendar 1984 | | Calendar 1979 | |
| Hub | Difference (Percentage Pts.) | Hub | Difference (Percentage Pts.) | Hub | Difference (Percentage Pts.) |
| CVG | 74.1 | DAY | 50.2 | FMY | 53.3 |
| DAY | 68.5 | CVG | 45.6 | RDU | 43.1 |
| RDU | 56.5 | ELP | 38.2 | CLE | 33.7 |
| BNA | 54.7 | ROC | 37.4 | RNO | 30.7 |
| BWI | 49.9 | CLE | 31.6 | BUF | 28.6 |
| ELP | 33.5 | ORF | 28.4 | PDX | 28.1 |
| SYR | 31.6 | ABQ | 23.0 | ELP | 25.9 |
| BUF | 31.0 | PDX | 21.9 | SMF | 22.8 |
| ORF | 30.4 | BWI | 19.7 | MSY | 22.4 |
| MKE | 29.6 | SAT | 18.4 | CMH | 22.0 |
| SJC | 27.1 | BUF | 17.2 | AUS | 19.5 |
| ROC | 26.7 | OMA | 16.9 | ORF | 19.3 |
| IND | 23.0 | MKE | 16.4 | SAT | 17.0 |
| ABQ | 18.7 | FMY | 13.4 | OKC | 15.7 |
| OMA | 15.0 | MSY | 13.1 | OMA | 14.8 |
| AUS | 13.3 | AUS | 12.3 | TUS | 13.7 |
| RNO | 13.2 | ONT | 9.0 | BDL | 13.0 |
| PBI | 10.2 | RNO | 9.0 | BNA | 12.9 |
| SAT | 9.9 | IND | 8.8 | SJC | 11.0 |
| ONT | 8.0 | SMF | 6.2 | CVG | 10.4 |
| TUS | 7.9 | BNA | 5.6 | DAY | 9.2 |
| PDX | 7.2 | SYR | 4.7 | JAX | 6.8 |
| CMH | 6.6 | PBI | 3.3 | ROC | 6.8 |
| FMY | 5.0 | RDU | 3.1 | ONT | 6.6 |
| SMF | 4.5 | CMH | 2.6 | PBI | 5.7 |
| TUL | 3.7 | BDL | 2.0 | ABQ | 4.2 |
| JAX | 2.6 | TUS | 1.5 | SYR | 3.4 |
| OKC | 2.0 | TUL | 1.4 | BWI | 2.4 |
| BDL | 1.8 | SJC | 1.0 | IND | 1.8 |
| CLE | 0.8 | OKC | 0.5 | MKE | 0.3 |
| MSY | 0.2 | JAX | 0.4 | TUL | 0.3 |

Summary Comparisons

| Difference | Number of Points | | | Cumulative Totals | | |
|-------------|------------------|------------------|------------------|-------------------|------------------|------------------|
| | Calendar 1988 | Calendar 1984 | Calendar 1979 | Calendar 1988 | Calendar 1984 | Calendar 1979 |
| 0-4.9% | 7 | 10 | 6 | 7 | 10 | 6 |
| 5.0-9.9 | 6 | 5 | 5 | 13 | 15 | 11 |
| 10.0-14.9 | 3 | 3 | 6 | 16 | 18 | 17 |
| 15.0-19.9 | 2 | 5 | 4 | 18 | 23 | 21 |
| 20.0-29.9 | 4 | 3 | 6 | 22 | 26 | 27 |
| 30.0-39.9 | 4 | 3 | 2 | 26 | 29 | 29 |
| 40.0-49.9 | 1 | 1 | 1 | 27 | 30 | 30 |
| 50.0-59.9 | 2 | 1 | 1 | 29 | 31 | 31 |
| 60.0-69.9 | 1 | | | 30 | | |
| 70.0-79.9 | 1 | | | 31 | | |
| 80.0-89.9 | | | | | | |
| 90% or more | | | | | | |

SOURCE: Form 41, Schedule T-3.

NON-STOP SERVICE CONCENTRATION AT
SELECTED LARGE AND MEDIUM HUBS

Tables II-13 through II-17

Objective: To evaluate competition at connecting hubs by segregating nonstop service by type of spoke point served (based on hub size) and status of the competitor (hub carrier, code-affiliate, other end point hub carrier, non-hub carrier). The hub selection includes most highly concentrated hubs, and a small number of other hubs. The hub selection was limited simply due to the time required to accumulate this data.

Data Sources: The Official Airline Guide.

Observations/Interpretation: Table II-13: This shows that at concentrated hubs not only is nonstop service dominated by the hubbing carriers and their code-affiliates, as expected, the principal nonstop competition comes from other hubbing carriers (those with hubs at the other end point of a city pair).

Table II-14: This shows how the hubbing carriers and their code-sharing affiliates combine to dominate nonstop service at hubs, with the major carrier focusing on service to the smaller spoke cities.

Table II-15: This amplifies the dominance of hubbing carriers and their code affiliates at concentrated hubs. In combination with the previous table, it also shows that participation by non-hubbing carriers is even more limited than a simple count of city-pair markets indicates. While other hubbing carriers tend to compete with comparable frequency, non-hubbing carriers typically offer one or two trips per city served. These tend to be so-called tag-end flights.

At less concentrated hubs, even the non-hubbing carriers operate comparable frequency. This suggests that non-hubbing carriers are actively competing at the less concentrated hubs.

Table II-16: This reveals several significant pieces of information which bear on nonstop competition at large hubs.

- * At concentrated hubs, as expected, the hubbing carriers and their code-sharing affiliates have the only nonstop service to a high proportion of spoke points.
- * At concentrated hubs, most nonstop competition occurs at large hubs, typically to other connecting hubs.
- * At concentrated hubs, very few cities receive nonstop service by more than two carriers.

- * At concentrated hubs, the hubbing carriers often provide the only nonstop service to other large and medium hubs, even to other carriers' connecting hubs.
- * At less concentrated hubs, although the number of nonstop monopolies decreases, a high proportion of single-plane service continues to be by a single carrier. However, the monopoly (nonstop) service markets are not nearly as controlled by a single carrier. For example, the most dominant carrier at Boston does not have any monopoly nonstop to other large or medium hubs, but other hubbing carriers have numerous nonstop monopolies, mostly to their own connecting hubs.

Table II-17: This further amplifies the extent to which service to and from concentrated hubs is dominated by hubbing carriers. Other endpoint hub carriers occasionally have the only nonstop service to their own connecting hubs, and sometimes complete to their connecting hubs with non hubbing carriers. Generally, however, the hub-dominant carriers are competitive factors in virtually all city-pair markets involving their respective hubs as an end point.

An evaluation of the significance of what these tables show with respect to nonstop competition has to be tempered with the knowledge that there are other forms of competition to discipline service and price in many markets that have nonstop service; i.e., one-stop service and on-line connecting services. It is demonstrated elsewhere in this study that city-pair markets are significantly less concentrated now than they were before the hubbing system of service resulted in highly concentrated connecting hub complexes.

However, regardless of the ultimate assessment of the current competitive environment, there has to be an element of concern about increasing hub concentrating, on the one hand and the fact that non-hubbing carriers have stopped competing in most city pairs involving a highly concentrated hub, and even both hubbing carriers often do not compete in city pairs that involve two concentrated hubs. One competitive factor has been squeezed out and it is not clear that the weeding-out process has yet stabilized. Hubbing clearly has a tendency to divide city pair markets on a nonstop service basis, and notwithstanding other forms of competitive service (one stop and on-line connecting service), this tendency is troublesome.

HUB CONCENTRATION
NUMBER OF POINTS SERVED BY HUBBING CARRIER
AND OTHER CARRIERS AT SELECTED HUBS

| | Hub Carrier 1/ | Code Affiliate | Other Hubbing Carrier | Non-Hubbing Carrier | | Unduplicated Total |
|----------------------------------|-------------------|-------------------|-----------------------------|------------------------|----------|-----------------------|
| | | | | Large | Commuter | |
| <u>Highly Concentrated Hubs:</u> | | | | | | |
| Charlotte | 61 | 28 | 6 | 4 | 0 | 73 |
| Pittsburgh | 71 | 20 | 12 | 6 | 2 | 93 |
| St. Louis | 76 | 21 | 15 | 6 | 1 | 95 |
| Cincinnati | 44 | 26 | 11 | 10 | 4 | 64 |
| Salt Lake City | 48 | 18 | 7 | 5 | 2 | 58 |
| Minneapolis | 67 | 25 | 13 | 3 | 6 | 89 |
| Dayton | 26 | 13 | 8 | 0 | 4 | 39 |
| <u>Medium Concentrated Hubs:</u> | | | | | | |
| Philadelphia | 32 | 20 | 19 | 18 | 16 | 70 |
| Buffalo | 11 | 1 | 9 | 3 | 5 | 22 |
| <u>Unconcentrated Hubs:</u> | | | | | | |
| Boston | 8 | 18 | 24 | 23 | 18 | 67 |
| Columbus | 3 | 3 | 16 | 9 | 4 | 25 |
| <u>Two Carrier Hubs:</u> | | | | | | |
| Denver | 72 | 19 | 15 | 4 | 7 | 97 |
| Dallas | 82 | 18 | 18 | 23 2/ | 6 | 108 |

1/ Carrier with an established connecting complex or most dominant carrier at hubs without a major connecting complex.

2/ Mostly Southwest Airlines at Love Field.

SOURCE: July 1, 1988 Official Airline Guide.

Table II-14
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HUB CONCENTRATION
NUMBER OF POINTS SERVED NONSTOP BY HUBBING CARRIER
AND OTHER CARRIERS AT SELECTED HUBS, SEGREGATED BY HUB SIZE

| | Hub Carrier 1/ | Code Affiliate | Other Hubbing Carrier | Non-Hubbing Carrier | | Unduplicated Total |
|----------------------------------|-------------------|-------------------|-----------------------------|------------------------|----------|-----------------------|
| | | | | Large | Commuter | |
| <u>Highly Concentrated Hubs:</u> | | | | | | |
| Charlotte: | | | | | | |
| Large | 21 | 0 | 5 | 1 | 0 | 21 |
| Medium | 13 | 1 | 1 | 1 | 0 | 13 |
| Small | 16 | 6 | 0 | 1 | 0 | 16 |
| Non-hub | 11 | 21 | 0 | 1 | 0 | 23 |
| Total | 61 | 28 | 6 | 4 | 0 | 73 |
| Pittsburgh: | | | | | | |
| Large | 26 | 0 | 10 | 3 | 0 | 26 |
| Medium | 22 | 0 | 2 | 2 | 1 | 23 |
| Small | 14 | 2 | 0 | 1 | 1 | 17 |
| Non-hub | 9 | 18 | 0 | 0 | 0 | 27 |
| Total | 71 | 20 | 12 | 6 | 2 | 93 |
| St. Louis: | | | | | | |
| Large | 30 | 0 | 14 | 2 | 0 | 30 |
| Medium | 29 | 0 | 1 | 2 | 0 | 29 |
| Small | 13 | 3 | 0 | 1 | 0 | 15 |
| Non-hub | 4 | 18 | 0 | 1 | 1 | 21 |
| Total | 76 | 21 | 15 | 6 | 1 | 95 |
| Cincinnati: | | | | | | |
| Large | 24 | 2 | 10 | 4 | 0 | 27 |
| Medium | 14 | 8 | 1 | 4 | 4 | 18 |
| Small | 6 | 10 | 0 | 2 | 0 | 13 |
| Non-hub | 0 | 6 | 0 | 0 | 0 | 6 |
| Total | 44 | 26 | 11 | 10 | 4 | 64 |
| Salt Lake City: | | | | | | |
| Large | 17 | 0 | 7 | 3 | 0 | 17 |
| Medium | 15 | 2 | 0 | 0 | 0 | 16 |
| Small | 5 | 3 | 0 | 0 | 0 | 6 |
| Non-hub | 11 | 13 | 0 | 2 | 2 | 19 |
| Total | 48 | 18 | 7 | 5 | 2 | 58 |

Table II-14
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| | Hub Carrier 1/ | Code Affiliate | Other Hubbing Carrier | Non-Hubbing Carrier | | Unduplicated Total |
|----------------------------------|-------------------|-------------------|-----------------------------|------------------------|----------|-----------------------|
| | | | | Large | Commuter | |
| <u>Highly Concentrated Hubs:</u> | | | | | | |
| Minneapolis: | | | | | | |
| Large | 25 | 0 | 11 | 2 | 0 | 28 |
| Medium | 17 | 1 | 2 | 1 | 0 | 17 |
| Small | 10 | 6 | 0 | 0 | 1 | 11 |
| Non-hub | 15 | 18 | 0 | 0 | 5 | 33 |
| Total | 67 | 25 | 13 | 3 | 6 | 89 |
| Dayton: | | | | | | |
| Large | 14 | 2 | 5 | 0 | 1 | 19 |
| Medium | 1 | 3 | 3 | 0 | 3 | 7 |
| Small | 6 | 5 | 0 | 0 | 0 | 7 |
| Non-hub | 5 | 3 | 0 | 0 | 0 | 6 |
| Total | 26 | 13 | 8 | 0 | 4 | 39 |
| <u>Medium Concentrated Hubs:</u> | | | | | | |
| Philadelphia: | | | | | | |
| Large | 9 | 2 | 12 | 9 | 3 | 22 |
| Medium | 16 | 1 | 7 | 8 | 2 | 21 |
| Small | 4 | 4 | 0 | 1 | 4 | 10 |
| Non-hub | 3 | 13 | 0 | 0 | 7 | 17 |
| Total | 32 | 20 | 19 | 18 | 16 | 70 |
| Buffalo: | | | | | | |
| Large | 7 | 0 | 6 | 2 | 1 | 12 |
| Medium | 3 | 0 | 3 | 1 | 2 | 7 |
| Small | 1 | 1 | 0 | 0 | 0 | 1 |
| Non-hub | 0 | 0 | 0 | 0 | 2 | 2 |
| Total | 11 | 1 | 9 | 3 | 5 | 22 |
| <u>Unconcentrated Hubs:</u> | | | | | | |
| Boston: | | | | | | |
| Large | 7 | 0 | 14 | 11 | 1 | 23 |
| Medium | 1 | 1 | 10 | 6 | 0 | 16 |
| Small | 0 | 4 | 0 | 5 | 4 | 9 |
| Non-hub | 0 | 13 | 0 | 1 | 13 | 19 |
| Total | 8 | 18 | 24 | 23 | 18 | 67 |

Table II-14
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| | Hub Carrier 1/ | Code Affiliate | Other Hubbing Carrier | Non-Hubbing Carrier | | Unduplicated Total |
|-----------------------------|-------------------|-------------------|-----------------------------|------------------------|----------|-----------------------|
| | | | | Large | Commuter | |
| <u>Unconcentrated Hubs:</u> | | | | | | |
| Columbus: | | | | | | |
| Large | 1 | 0 | 11 | 4 | 1 | 14 |
| Medium | 2 | 2 | 5 | 5 | 3 | 10 |
| Small | 0 | 1 | 0 | 0 | 0 | 1 |
| Non-hub | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 3 | 3 | 16 | 9 | 4 | 25 |
| <u>Two-Carrier Hubs:</u> | | | | | | |
| Denver: | | | | | | |
| Large | 27 | 0 | 13 | 3 | 0 | 29 |
| Medium | 23 | 0 | 2 | 0 | 0 | 24 |
| Small | 14 | 2 | 0 | 1 | 1 | 15 |
| Non-hub | 8 | 17 | 0 | 0 | 6 | 29 |
| Total | 72 | 19 | 15 | 4 | 7 | 97 |
| Dallas: | | | | | | |
| Large | 30 | 0 | 15 | 12 | 0 | 30 |
| Medium | 30 | 0 | 3 | 7 | 0 | 33 |
| Small | 21 | 1 | 0 | 4 | 0 | 21 |
| Non-hub | 1 | 17 | 0 | 0 | 6 | 24 |
| Total | 82 | 18 | 18 | 23 2/ | 6 | 108 |

1/ Carrier with established connecting complex or most dominant carrier at hubs without a major connecting complex.

2/ Mostly Southwest Airlines at Love Field.

SOURCE: July 1, 1988 Official Airline Guide.

HUB CONCENTRATION
NUMBER OF DEPARTURES OPERATED BY HUBBING CARRIERS
AND OTHER CARRIERS AT SELECTED HUBS,
SEGREGATED BY HUB SIZE OF THE POINTS SERVED

| | Hub Carrier 1/ | Code Affiliate | Other Hubbing Carrier | Non-Hubbing Carrier | | Unduplicated Total |
|----------------------------------|-------------------|-------------------|-----------------------------|------------------------|----------|-----------------------|
| | | | | Large | Commuter | |
| <u>Highly Concentrated Hubs:</u> | | | | | | |
| Charlotte: | | | | | | |
| Large | 94 | 0 | 25 | 2 | 0 | 121 |
| Medium | 46 | 4 | 3 | 1 | 0 | 54 |
| Small | 72 | 29 | 0 | 3 | 0 | 104 |
| Non-hub | 46 | 96 | 0 | 2 | 0 | 144 |
| Total | 258 | 129 | 28 | 8 | 0 | 423 |
| Pittsburgh: | | | | | | |
| Large | 118 | 0 | 47 | 6 | 0 | 171 |
| Medium | 85 | 0 | 10 | 2 | 2 | 99 |
| Small | 55 | 18 | 0 | 1 | 2 | 76 |
| Non-hub | 26 | 102 | 0 | 0 | 0 | 128 |
| Total | 284 | 120 | 57 | 9 | 4 | 474 |
| St. Louis: | | | | | | |
| Large | 154 | 0 | 59 | 2 | 0 | 215 |
| Medium | 104 | 0 | 2 | 14 | 0 | 120 |
| Small | 43 | 9 | 0 | 2 | 0 | 54 |
| Non-hub | 12 | 133 | 0 | 3 | 2 | 150 |
| Total | 313 | 142 | 61 | 21 | 2 | 539 |
| Cincinnati: | | | | | | |
| Large | 70 | 4 | 24 | 13 | 0 | 111 |
| Medium | 38 | 50 | 3 | 5 | 9 | 105 |
| Small | 11 | 55 | 0 | 2 | 0 | 68 |
| Non-hub | 0 | 33 | 0 | 0 | 0 | 33 |
| Total | 119 | 142 | 27 | 20 | 9 | 317 |
| Salt Lake City: | | | | | | |
| Large | 66 | 0 | 28 | 6 | 0 | 100 |
| Medium | 43 | 2 | 0 | 0 | 0 | 45 |
| Small | 14 | 4 | 0 | 0 | 0 | 18 |
| Non-hub | 22 | 39 | 0 | 4 | 6 | 71 |
| Total | 145 | 42 | 28 | 10 | 6 | 234 |

Table II-15

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| | Hub Carrier 1/ | Code Affiliate | Other Hubbing Carrier | Non-Hubbing Carrier | | Unduplicated Total |
|----------------------------------|-------------------|-------------------|-----------------------------|------------------------|----------|-----------------------|
| | | | | Large | Commuter | |
| <u>Highly Concentrated Hubs:</u> | | | | | | |
| Minneapolis: | | | | | | |
| Large | 164 | 0 | 56 | 6 | 0 | 226 |
| Medium | 42 | 1 | 15 | 3 | 0 | 61 |
| Small | 30 | 11 | 0 | 0 | 2 | 43 |
| Non-hub | 47 | 61 | 0 | 0 | 13 | 121 |
| Total | 283 | 73 | 71 | 9 | 15 | 451 |
| Dayton: | | | | | | |
| Large | 41 | 18 | 30 | 0 | 1 | 90 |
| Medium | 1 | 26 | 6 | 0 | 3 | 36 |
| Small | 19 | 16 | 0 | 0 | 0 | 35 |
| Non-hub | 17 | 7 | 0 | 0 | 0 | 24 |
| Total | 78 | 67 | 36 | 0 | 4 | 185 |
| <u>Medium Concentrated Hubs:</u> | | | | | | |
| Philadelphia: | | | | | | |
| Large | 46 | 19 | 76 | 30 | 29 | 200 |
| Medium | 47 | 7 | 23 | 19 | 4 | 100 |
| Small | 11 | 29 | 0 | 1 | 15 | 56 |
| Non-hub | 9 | 118 | 0 | 0 | 47 | 174 |
| Total | 113 | 173 | 99 | 50 | 95 | 530 |
| Buffalo: | | | | | | |
| Large | 28 | 0 | 28 | 2 | 2 | 60 |
| Medium | 5 | 0 | 10 | 3 | 3 | 21 |
| Small | 2 | 1 | 0 | 0 | 0 | 3 |
| Non-hub | 0 | 0 | 0 | 0 | 3 | 3 |
| Total | 35 | 1 | 38 | 5 | 8 | 87 |
| <u>Unconcentrated Hubs:</u> | | | | | | |
| Boston: | | | | | | |
| Large | 45 | 0 | 103 | 72 | 12 | 232 |
| Medium | 1 | 5 | 39 | 20 | 5 | 70 |
| Small | 0 | 39 | 0 | 11 | 13 | 63 |
| Non-hub | 0 | 72 | 0 | 0 | 57 | 129 |
| Total | 46 | 116 | 142 | 103 | 87 | 494 |

Table II-15
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| | Hub Carrier 1/ | Code Affiliate | Other Hubbing Carrier | Non-Hubbing Carrier | | Unduplicated Total |
|-----------------------------|-------------------|-------------------|-----------------------------|------------------------|----------|-----------------------|
| | | | | Large | Commuter | |
| <u>Unconcentrated Hubs:</u> | | | | | | |
| Columbus: | | | | | | |
| Large | 5 | 0 | 43 | 7 | 4 | 59 |
| Medium | 5 | 11 | 20 | 10 | 10 | 56 |
| Small | 0 | 2 | 0 | 0 | 0 | 2 |
| Non-hub | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 10 | 13 | 63 | 17 | 14 | 117 |
| <u>Two-Carrier Hubs:</u> | | | | | | |
| Denver: | | | | | | |
| Large | 224 | 0 | 50 | 4 | 0 | 278 |
| Medium | 128 | 0 | 3 | 0 | 0 | 131 |
| Small | 54 | 16 | 0 | 1 | 4 | 75 |
| Non-hub | 17 | 83 | 0 | 0 | 13 | 113 |
| Total | 423 | 99 | 53 | 5 | 17 | 597 |
| Dallas: | | | | | | |
| Large | 262 | 0 | 92 | 23 | 0 | 377 |
| Medium | 192 | 0 | 12 | 52 | 0 | 256 |
| Small | 98 | 3 | 0 | 28 | 0 | 129 |
| Non-hub | 2 | 189 | 0 | 0 | 18 | 209 |
| Total | 554 | 192 | 104 | 103 2/ | 18 | 971 |

1/ Carrier with established connecting complex or most dominant carrier at hubs without a major connecting complex.

2/ Mostly Southwest Airlines at Love Field.

SOURCE: July 1, 1988 Official Airline Guide.

HUB CONCENTRATION
NUMBER OF NONSTOP COMPETITORS AT SELECTED HUBS
SEGREGATED BY HUB SIZE

| Hub and Number of Competitors | Number of Points Served | | | | | | Total Cities |
|------------------------------------|-------------------------|-----------|--------------|-----------|---------------|-------------|-----------------|
| | Large Hub | | Medium Hub | | Small Hubs | Non Hubs | |
| | Conx Hubs | Other | Conx Hubs | Other | | | |
| <u>Highly Concentrated Hubs:</u> | | | | | | | |
| Charlotte: | | | | | | | |
| 1: Hub Carrier <u>1</u> / Other | 5 | 10 | 6 | 6 | 15 | 22 | 64 |
| 2 | 4 | 1 | | | | 1 | 6 |
| 3 | 1 | | 1 | | 1 | | 3 |
| 4+ | | | | | | | 0 |
| Total | <u>10</u> | <u>11</u> | <u>7</u> | <u>6</u> | <u>16</u> | <u>23</u> | <u>73</u> |
| Pittsburgh: | | | | | | | |
| 1: Hub Carrier Other | 4 | 9 | 6 | 12 | 15 | 27 | 73 |
| 2 | 8 | 2 | 4 | 1 | 2 | | 17 |
| 3 | 2 | 1 | | | | | 3 |
| 4+ | | | | | | | 0 |
| Total | <u>14</u> | <u>12</u> | <u>10</u> | <u>13</u> | <u>17</u> | <u>27</u> | <u>93</u> |
| St. Louis: | | | | | | | |
| 1: Hub Carrier Other | 3 | 12 | 6 | 20 | 14 | 19 | 74 |
| 2 | 10 | 1 | 2 | 1 | 1 | 2 | 2 |
| 3 | 3 | | | | | | 15 |
| 4+ | 1 | | | | | | 3 |
| Total | <u>17</u> | <u>13</u> | <u>8</u> | <u>21</u> | <u>15</u> | <u>21</u> | <u>95</u> |
| Cincinnati: | | | | | | | |
| 1: Hub Carrier Other | 4 | 9 | 3 | 8 | 11 | 6 | 41 |
| 2 | 2 | | 2 | | | | 4 |
| 3 | 8 | 3 | 1 | 1 | 2 | | 15 |
| 4+ | 1 | | 2 | 1 | | | 4 |
| Total | <u>15</u> | <u>13</u> | <u>8</u> | <u>10</u> | <u>13</u> | <u>6</u> | <u>64</u> |

Table II-16
Page 2 of 4

| Hub and Number of Competitors | Number of Points Served | | | | | | | Total Cities |
|----------------------------------|-------------------------|-----------|--------------|-----------|---------------|-------------|-----------|-----------------|
| | Large Hub | | Medium Hub | | Small Hubs | Non Hubs | | |
| | Conx Hubs | Other | Conx Hubs | Other | | | | |
| <u>Highly Concentrated Hubs:</u> | | | | | | | | |
| Salt Lake City: | | | | | | | | |
| 1: Hub Carrier | 4 | 5 | 1 | 15 | 6 | 15 | 46 | |
| Other | | | | | | | | |
| 2 | 4 | 1 | | | | 2 | 2 | |
| 3 | 2 | | | | | 2 | 7 | |
| 4+ | 1 | | | | | | 2 | |
| Total | <u>11</u> | <u>6</u> | <u>1</u> | <u>15</u> | <u>6</u> | <u>19</u> | <u>58</u> | |
| Minneapolis: | | | | | | | | |
| 1: Hub Carrier <u>1</u> / | 5 | 11 | 4 | 10 | 10 | 28 | 68 | |
| Other | 2 | | | | | | | |
| 2 | 5 | 1 | 2 | 1 | 1 | 4 | 6 | |
| 3 | 4 | | | | | 1 | 11 | |
| 4+ | | | | | | | 4 | |
| Total | <u>16</u> | <u>12</u> | <u>6</u> | <u>11</u> | <u>11</u> | <u>33</u> | <u>89</u> | |
| Dayton: | | | | | | | | |
| 1: Hub Carrier | 4 | 10 | 1 | 1 | 7 | 6 | 29 | |
| Other | 3 | | 2 | | | | | |
| 2 | 1 | | 2 | 1 | | | 5 | |
| 3 | 1 | | | | | | 4 | |
| 4+ | | | | | | | 1 | |
| Total | <u>9</u> | <u>10</u> | <u>5</u> | <u>2</u> | <u>7</u> | <u>6</u> | <u>39</u> | |
| <u>Medium Concentrated Hubs:</u> | | | | | | | | |
| Philadelphia: | | | | | | | | |
| 1: Hub Carrier | 1 | | 2 | 4 | 4 | 10 | 21 | |
| Other | 6 | 3 | 2 | | 2 | 1 | 14 | |
| 2 | 5 | 3 | 6 | 6 | 4 | 5 | 29 | |
| 3 | 2 | 2 | | 1 | | 1 | 6 | |
| 4+ | | | | | | | 0 | |
| Total | <u>14</u> | <u>8</u> | <u>10</u> | <u>11</u> | <u>10</u> | <u>17</u> | <u>70</u> | |

Table II-16
Page 3 of 4

| Hub and Number of Competitors | Number of Points Served | | | | | | Total Cities |
|----------------------------------|-------------------------|-------|--------------|-------|---------------|-------------|-----------------|
| | Large Hub | | Medium Hub | | Small Hubs | Non Hubs | |
| | Conx Hubs | Other | Conx Hubs | Other | | | |
| <u>Medium Concentrated Hubs:</u> | | | | | | | |
| Buffalo: | | | | | | | |
| 1: Hub Carrier | 1 | 4 | | 2 | | | 7 |
| Other | 3 | | 4 | | | 2 | 9 |
| 2 | 3 | 1 | | | 1 | | 5 |
| 3 | | | | 1 | | | 1 |
| 4+ | | | | | | | |
| Total | 14 | 5 | 4 | 3 | 1 | 2 | 22 |
| <u>Unconcentrated Hubs:</u> | | | | | | | |
| Boston: | | | | | | | |
| 1: Hub Carrier | | | | | 1 | 6 | 7 |
| Other | 9 | 1 | 8 | 4 | 5 | 5 | 32 |
| 2 | 4 | 3 | 2 | 2 | | 8 | 19 |
| 3 | 1 | 3 | | | 2 | | 6 |
| 4+ | | 2 | | | 1 | | 3 |
| Total | 14 | 9 | 10 | 6 | 9 | 19 | 67 |
| Columbus: | | | | | | | |
| 1: Hub Carrier <u>1/</u> | | | | | 1 | 0 | 1 |
| Other | 7 | 1 | 5 | 2 | | | 15 |
| 2 | 3 | 1 | 1 | 1 | | | 6 |
| 3 | 1 | 1 | 1 | | | | 3 |
| 4+ | | | | | | | |
| Total | 11 | 3 | 6 | 3 | 1 | 0 | 25 |
| <u>Two Carrier Hubs:</u> | | | | | | | |
| Denver: | | | | | | | |
| 1: 1st Hub Carrier | 1 | | 2 | 2 | 1 | 13 | 19 |
| 2nd Hub Carrier | | | | 1 | 7 | 4 | 12 |
| Other | 2 | | 1 | | | 6 | 9 |
| 2: Hub Carrier Only | 3 | 11 | 1 | 16 | 5 | 6 | 42 |
| Hub and/or Other | 1 | 1 | | | | | 2 |
| 3 | 7 | | 1 | | 2 | | 10 |
| 4+ | 3 | | | | | | 3 |
| Total | 17 | 12 | 5 | 19 | 15 | 29 | 97 |

Table II-16
Page 4 of 4

| Hub and Number of Competitors | Number of Points Served | | | | | | Total Cities |
|----------------------------------|-------------------------|-------|--------------|-------|---------------|-------------|-----------------|
| | Large Hub | | Medium Hub | | Small Hubs | Non Hubs | |
| | Conx Hubs | Other | Conx Hubs | Other | | | |
| <u>Two Carrier Hubs:</u> | | | | | | | |
| Dallas: | | | | | | | |
| 1: 1st Hub Carrier | | | | 12 | 10 | 3 | 25 |
| 2nd Hub Carrier | | | | | | 1 | 1 |
| Other | | | 3 | | | 6 | 9 |
| 2: Hub Carrier Only | 1 | 6 | 5 | 6 | 7 | 14 | 39 |
| Hub and/or Other | 4 | | | | 1 | | 5 |
| 3 | 10 | 6 | | 6 | 3 | | 25 |
| 4+ | 2 | 1 | | 1 | | | 4 |
| Total | 17 | 13 | 8 | 25 | 21 | 24 | 108 |

1/ Carrier with established connecting complex or most dominant carrier at hubs without a major connecting complex.

SOURCE: July 1, 1988 Official Airline Guide.

HUB CONCENTRATION
COMPETITION SEGREGATED BY HUB SIZE AND
HUBBING STATUS OF COMPETITOR 1/

| | Number of Points Served | | | | | | |
|--|-------------------------|-------|--------------|-------|-------|------|-------|
| | Large Hub | | Medium Hub | | Small | | Total |
| | Conx Hubs | Other | Conx Hubs | Other | Hubs | Hubs | |
| <u>Highly Concentrated Hubs:</u> | | | | | | | |
| Charlotte: | | | | | | | |
| Single Carrier Markets: | | | | | | | |
| Hub Carrier | | | | | | | |
| Other Endpoint Hub Carrier | 5 | 10 | 6 | 6 | 15 | 22 | 64 |
| Other Carrier | | | | | | | |
| Competitive Markets: | | | | | | | |
| Hub Carrier & Other Endpoint Hub Carriers | 5 | | | | | | 5 |
| Hub Carrier & Other Hub and Non-Hub Carriers | | | | | | | |
| Hub Carrier & Non-hub Carriers | | 1 | | | 1 | 1 | 3 |
| Other Endpoint Hub Carriers Only | | | | | | | |
| Other Endpoint Hub and Non-hub Carriers | | | 1 | | | | 1 |
| Non-hub Carriers | | | | | | | |
| Total | 10 | 11 | 7 | 6 | 16 | 23 | 73 |
| Pittsburgh: | | | | | | | |
| Single Carrier Markets: | | | | | | | |
| Hub Carrier | | | | | | | |
| Other Endpoint Hub Carrier | 4 | 9 | 6 | 12 | 15 | 27 | 73 |
| Other Carrier | | | | | | | |
| Competitive Markets: | | | | | | | |
| Hub Carrier & Other Endpoint Hub Carriers | 10 | | 3 | | | | 13 |
| Hub Carrier & Other Hub and Non-Hub Carriers | | | | | | | |
| Hub Carrier & Non-hub Carriers | | 3 | 1 | 1 | 2 | | 7 |
| Other Endpoint Hub Carriers Only | | | | | | | |
| Other Endpoint Hub and Non-hub Carriers | | | | | | | |
| Non-hub Carriers | | | | | | | |
| Total | 14 | 12 | 10 | 13 | 17 | 27 | 93 |

Table II-17
Page 2 of 7

| | Number of Points Served | | | | | | |
|--|-------------------------|-------|------------|-------|------------|------|--------------|
| | Large Hub | | Medium Hub | | Small Hubs | | Total Cities |
| | Conx Hubs | Other | Conx Hubs | Other | Hubs | Hubs | |
| <u>Highly Concentrated Hubs:</u> | | | | | | | |
| St. Louis: | | | | | | | |
| Single Carrier Markets: | | | | | | | |
| Hub Carrier | | | | | | | |
| Other Endpoint Hub Carrier | 3 | 12 | 6 | 20 | 14 | 19 | 74 |
| Other Carrier | | | | | | 2 | 2 |
| Competitive Markets: | | | | | | | |
| Hub Carrier & Other Endpoint Hub Carriers | 13 | | | | | | 13 |
| Hub Carrier & Other Hub and Non-Hub Carriers | 1 | | 1 | | | | 2 |
| Hub Carrier & Non-hub Carriers | | 1 | 1 | 1 | 1 | | 4 |
| Other Endpoint Hub Carriers Only | | | | | | | |
| Other Endpoint Hub and Non-hub Carriers | | | | | | | |
| Non-hub Carriers | | | | | | | |
| Total | 17 | 13 | 8 | 21 | 15 | 21 | 95 |
| Cincinnati: | | | | | | | |
| Single Carrier Markets: | | | | | | | |
| Hub Carrier | 4 | 9 | 3 | 8 | 11 | 6 | 41 |
| Other Endpoint Hub Carrier | 2 | | 2 | | | | 4 |
| Other Carrier | | | | | | | |
| Competitive Markets: | | | | | | | |
| Hub Carrier & Other Endpoint Hub Carriers | 8 | | | | | | 8 |
| Hub Carrier & Other Hub and Non-Hub Carriers | | 2 | 1 | | | | 3 |
| Hub Carrier & Non-hub Carriers | 1 | | 2 | 2 | 2 | | 7 |
| Other Endpoint Hub Carriers Only | | | | | | | |
| Other Endpoint Hub and Non-hub Carriers | | | | | | | |
| Non-hub Carriers | | | | | | | |
| Total | 15 | 12 | 8 | 10 | 13 | 6 | 64 |

| | Number of Points Served | | | | | | |
|--|-------------------------|-----------|------------|-----------|-----------|-----------|-----------|
| | Large Hub | | Medium Hub | | Small | | Total |
| | Conx | Hubs | Other | Conx | Hubs | Hubs | |
| <u>Highly Concentrated Hubs:</u> | | | | | | | |
| Salt Lake City: | | | | | | | |
| Single Carrier Markets: | | | | | | | |
| Hub Carrier | | | | | | | |
| Other Endpoint Hub Carrier | 4 | 5 | 1 | 15 | 6 | 15 | 46 |
| Other Carrier | | | | | | | |
| Competitive Markets: | | | | | | | |
| Hub Carrier & Other Endpoint Hub Carriers | 5 | | | | | | 5 |
| Hub Carrier & Other Hub and Non-Hub Carriers | 2 | | | | | | 2 |
| Hub Carrier & Non-hub Carriers | | 1 | | | | 2 | 3 |
| Other Endpoint Hub Carriers Only | | | | | | | |
| Other Endpoint Hub and Non-hub Carriers | | | | | | | |
| Non-hub Carriers | | | | | | | |
| Total | <u>11</u> | <u>6</u> | <u>1</u> | <u>15</u> | <u>6</u> | <u>19</u> | <u>58</u> |
| Minneapolis: | | | | | | | |
| Single Carrier Markets: | | | | | | | |
| Hub Carrier | | | | | | | |
| Other Endpoint Hub Carrier | 5 | 11 | 4 | 10 | 10 | 28 | 68 |
| Other Carrier | 2 | | | | | 4 | 2 |
| Competitive Markets: | | | | | | | |
| Hub Carrier & Other Endpoint Hub Carriers | 8 | | | | | | 10 |
| Hub Carrier & Other Hub and Non-Hub Carriers | 1 | | | | | | 1 |
| Hub Carrier & Non-hub Carriers | | | | 1 | 1 | 1 | 3 |
| Other Endpoint Hub Carriers Only | | | | | | | |
| Other Endpoint Hub and Non-hub Carriers | | | | | | | |
| Non-hub Carriers | | | | | | | |
| Total | <u>16</u> | <u>12</u> | <u>6</u> | <u>11</u> | <u>11</u> | <u>33</u> | <u>89</u> |

Table II-17
Page 4 of 7

| | Number of Points Served | | | | | |
|--|-------------------------|-------|--------------|-------|-------|-------------|
| | Large Hub | | Medium Hub | | Small | |
| | Conx Hubs | Other | Conx Hubs | Other | Hubs | Non Hubs |
| <u>Highly Concentrated Hubs:</u> | | | | | | |
| Dayton: | | | | | | |
| Single Carrier Markets: | | | | | | |
| Hub Carrier | | | | | | |
| Other Endpoint Hub Carrier | 4 | 10 | 1 | 1 | 7 | 6 |
| Other Carrier | 3 | | 2 | | | |
| Total | | | | | | 29 |
| Competitive Markets: | | | | | | 5 |
| Hub Carrier & Other Endpoint Hub Carriers | 1 | | | | | |
| Hub Carrier & Other Hub and Non-Hub Carriers | 1 | | | | | |
| Hub Carrier & Non-hub Carriers | | | | | | 1 |
| Other Endpoint Hub Carriers Only | | | 1 | 1 | | 1 |
| Other Endpoint Hub and Non-hub Carriers | | | 1 | | | 2 |
| Non-hub Carriers | | | | | | 1 |
| Total | 9 | 10 | 5 | 2 | 7 | 6 |
| Total | | | | | | 39 |
| <u>Medium Concentrated Hubs:</u> | | | | | | |
| Philadelphia: | | | | | | |
| Single Carrier Markets: | | | | | | |
| Hub Carrier | | | | | | |
| Other Endpoint Hub Carrier | 1 | | 1 | 4 | 4 | 10 |
| Other Carrier | 5 | | 2 | | | |
| Total | | | | | | 20 |
| Competitive Markets: | | | | | | |
| Hub Carrier & Other Endpoint Hub Carriers | 1 | 3 | | | 2 | 1 |
| Hub Carrier & Other Hub and Non-Hub Carriers | | | | | | |
| Hub Carrier & Non-hub Carriers | | | | | | 7 |
| Other Endpoint Hub Carriers Only | 4 | | 4 | | | |
| Other Endpoint Hub and Non-hub Carriers | | | | | | 8 |
| Non-hub Carriers | | | | | | |
| Total | 2 | 3 | 2 | 6 | 4 | 6 |
| Total | 1 | | 1 | | | 21 |
| Total | 14 | 8 | 10 | 11 | 10 | 17 |
| Total | | | | | | 70 |

Table II-17
Page 5 of 7

| | Number of Points Served | | | | | | |
|--|-------------------------|----------|------------|----------|------------|-----------|--------------|
| | Large Hub | | Medium Hub | | Small Hubs | | Total Cities |
| | Conx Hubs | Other | Conx Hubs | Other | Hubs | Non Hubs | |
| <u>Medium Concentrated Hubs:</u> | | | | | | | |
| Buffalo: | | | | | | | |
| Single Carrier Markets: | | | | | | | |
| Hub Carrier | 1 | 4 | | 2 | | | 7 |
| Other Endpoint Hub Carrier | 3 | | 3 | | | | 6 |
| Other Carrier | | | 1 | | | 2 | 3 |
| Competitive Markets: | | | | | | | |
| Hub Carrier & Other Endpoint Hub Carriers | 1 | | | | | | 1 |
| Hub Carrier & Other Hub and Non-hub Carriers | | | | | | | |
| Hub Carrier & Non-hub Carriers | | | | | | | |
| Other Endpoint Hub Carriers Only | 1 | 1 | 1 | | 1 | | 3 |
| Other Endpoint Hub and Non-hub Carriers | 1 | | | | | | 1 |
| Non-hub Carriers | | | | | | | 1 |
| Total | <u>7</u> | <u>5</u> | <u>4</u> | <u>3</u> | <u>1</u> | <u>2</u> | <u>22</u> |
| <u>Unconcentrated Hubs:</u> | | | | | | | |
| Boston: | | | | | | | |
| Single Carrier Markets: | | | | | | | |
| Hub Carrier | | | | | 1 | 6 | 7 |
| Other Endpoint Hub Carrier | 9 | 1 | 8 | | 5 | 5 | 17 |
| Other Carrier | | | | 4 | | | 15 |
| Competitive Markets: | | | | | | | |
| Hub Carrier & Other Endpoint Hub Carriers | 1 | 2 | 1 | | | | 2 |
| Hub Carrier & Other Hub and Non-hub Carriers | | 4 | | 1 | 3 | 7 | 2 |
| Hub Carrier & Non-hub Carriers | | | | | | | |
| Other Endpoint Hub Carriers Only | 2 | | 1 | | | | 15 |
| Other Endpoint Hub and Non-hub Carriers | 2 | | | | | | 3 |
| Non-hub Carriers | | | | | | | 2 |
| Total | <u>14</u> | <u>9</u> | <u>10</u> | <u>6</u> | <u>9</u> | <u>19</u> | <u>67</u> |

| | Number of Points Served | | | | | |
|--|-------------------------|-------|------------|-------|-------|----------|
| | Large Hub | | Medium Hub | | Small | |
| | Conx | Other | Conx | Other | Hubs | Non Hubs |

Unconcentrated Hubs:

Columbus:

Single Carrier Markets:

Hub Carrier
Other Endpoint Hub Carrier
Other Carrier

Competitive Markets:

Hub Carrier & Other Endpoint Hub Carriers
Hub Carrier & Other Hub and Non-Hub Carriers
Hub Carrier & Non-hub Carriers
Other Endpoint Hub Carriers Only
Other Endpoint Hub and Non-hub Carriers
Non-hub Carriers

Total

Two Carrier Hubs:

Denver:

Single Carrier Markets:

1st Hub Carrier
2nd Hub Carrier
Other Endpoint Hub Carrier

Competitive Markets:

Hub Carrier Only
Hub Carrier & Other Endpoint Hub Carriers
Hub Carrier & Non-hub Carriers
Other Endpoint Hub Carriers Only
Other Endpoint Hub and Non-hub Carriers
Non-hub Carriers

Total

| | | | | | | |
|----|----|---|----|----|----|----|
| 7 | | | 4 | | 1 | |
| | | | 1 | 1 | | |
| 1 | | | 1 | | | 2 |
| 1 | | | | | | |
| 2 | | | 1 | | | 1 |
| | | | | | | 3 |
| 11 | 3 | 3 | 7 | 2 | 1 | 0 |
| | | | | | | 25 |
| 1 | | | 2 | | 1 | 13 |
| 2 | | | 1 | | 7 | 4 |
| 3 | | | 1 | | | 6 |
| 11 | | | 1 | 16 | 5 | 6 |
| | | | 1 | | | |
| | | | | | 2 | |
| 17 | 12 | 5 | 19 | 15 | 29 | 97 |

| | Number of Points Served | | | | | |
|---|-------------------------|-----------|--------------|-----------|-----------|-----------------|
| | Large Hub | | Medium Hub | | Small | |
| | Conx Hubs | Other | Conx Hubs | Other | Hubs | Non Hubs |
| | | | | | | Total Cities |
| <u>Two Carrier Hubs:</u> | | | | | | |
| Dallas: | | | | | | |
| Single Carrier Markets: | | | | | | |
| 1st Hub Carrier | | | | 12 | 10 | 3 |
| 2nd Hub Carrier | | | | | | 1 |
| Other Endpoint Hub Carrier | | | | | | 3 |
| Other Carrier | | | 3 | | | 6 |
| Competitive Markets: | | | | | | |
| Hub Carrier Only | 1 | 6 | 5 | 6 | 7 | 14 |
| Hub Carrier & Other Endpoint Hub Carriers | 14 | | | | | 39 |
| Hub Carrier & Non-hub Carriers | 2 | 6 | | 7 | 4 | 14 |
| Other Endpoint Hub Carriers Only | | | | | | 19 |
| Other Endpoint Hub and Non-hub Carriers | | | | | | |
| Non-hub Carriers | | | | | | |
| Total | <u>17</u> | <u>13</u> | <u>8</u> | <u>25</u> | <u>21</u> | <u>24</u> |
| | | | | | | <u>1</u> |
| | | | | | | <u>108</u> |

1/ Carriers are categorized as hub carriers at the identified hub, hub carriers at the other endpoint and non-hub carriers.

TRAFFIC COMPOSITION AND NUMBERS OF
COMPETITORS -- SELECTED LARGE HUB-TO-
LARGE HUB CITY PAIRS

Table II-18

Objective: To study concentration trends in specific large City-pair markets.

Data Source: O&D Survey, Table 12.

Observations and Interpretations: Several trends are apparent:

- . Very little on-line connecting traffic exists in large city-pair markets of less than 1,000 miles.
- . In shorter-haul large markets (under 1,000 miles), the number of single-plane competitors generally increased from 1979 to 1984 and have not changed or decreased since.
- . In longer-haul markets no apparent trend exists in the number of single-plane competitors.
- . The clear-cut trend with regard to single-plane competitors is that non-hubbing carriers are exiting. In city-pairs where the number of single-plane competitors has increased, it is due to the emergence of new hub carriers.
- . Several very large city pairs have only one single-plane competitor and several of these also have very little on-line connecting competition.

Traffic Composition for Selected Large City-Pair Markets
Selected Traffic Data and Competitive Indicators

| Mileage | City-Pair | Year 9/30 | Pgtrs. Per Day | O&D Traffic (000) 1/ Single Plane Airline | | Single-Plane Traffic -- Carriers with a 10% or More of Total O&D: Percentages in () | | Online connx. Traffic 2/ % of Total | | # of Carriers | | # of Hubs | |
|---------|-----------|--------------|----------------------|--|--------|---|--|---|---------------|------------------|--------------|--------------|---------------|
| | | | | Total | Connx. | Total | Connx. | Total | % of Total | # of Carriers | # of Hubs | Total | % of Total |
| 553 | PIT-STL | 88 | 194 | 71 | 65 | 2 | TW (55.8), AL (33.6) | 2.7% | — | — | — | — | — |
| | | 84 | 165 | 60 | 54 | 1 | TW (62.0), AL (27.5) | 1.5 | — | — | — | — | — |
| | | 79 | 220 | 80 | 75 | 1 | TW (50.0), AL (43.4) | 1.0 | — | — | — | — | — |
| 589 | CLT-CHI | 88 | 350 | 128 | 106 | 12 | PI (64.0), UA (20.3) | 9.7 | 4 | 3 | 3 | — | — |
| | | 84 | 280 | 102 | 87 | 8 | PI (38.9), EA (24.9), (UA, 21.3) | 8.2 | 3 | 2 | 2 | — | — |
| | | 79 | 198 | 72 | 61 | 7 | EA (82.3) | 9.1 | 2 | 1 | 1 | — | — |
| 591 | CHI-WAS | 88 | 2,298 | 839 | 736 | 86 | UA (45.7), ML (28.9), AA (10.7) | 10.2 | 4 | 5 | 5 | — | — |
| | | 84 | 2,091 | 763 | 702 | 42 | UA (37.7), ML (23.5), AA (20.3) | 5.5 | 2 | 2 | 2 | — | — |
| | | 79 | 1,675 | 611 | 580 | 11 | AA (37.3), UA (32.9), TW (22.2) | 1.7 | — | — | — | — | — |
| 647 | DFW-DEN | 88 | 1,248 | 453 | 441 | 2 | AA (37.0), UA (21.8), DL (18.3), CO (17.8) | 0.4 | — | — | — | — | — |
| | | 84 | 1,221 | 446 | 425 | 4 | AA (32.4), DL (19.2), UA (17.4), FL (14.7), BN (11.4) | 0.8 | — | — | — | — | — |
| | | 79 | 910 | 332 | 318 | 4 | BN (60.0), FL (23.7) | 1.2 | — | — | — | — | — |
| 697 | DEN-MSP | 88 | 704 | 257 | 246 | 6 | NW (35.4), UA (33.1), CO (27.0) | 2.1 | — | — | — | — | — |
| | | 84 | 755 | 275 | 268 | 2 | CO (31.2), NW (25.5), UA (23.8), RC (14.1) | 0.6 | — | — | — | — | — |
| | | 79 | 480 | 175 | 167 | 1 | WA (51.8), RC (22.0), 99 (20.8) | 0.7 | — | — | — | — | — |

Traffic Composition for Selected Large City-Pair Markets
Selected Traffic Data and Competitive Indicators

| Mileage | City-Pair | Year 9/30 | Pgrrs. Per Day | O&D Traffic (000) 1/ | | | Single-Plane Traffic — Carriers with a 10% or More of Total O&D: Percentages in () | Online connx. Traffic 2/ | | |
|---------|-----------|--------------|----------------------|----------------------|-------|-------------------|--|--------------------------|---------------|--------------|
| | | | | Single Plane | | Airline Connx. | | % of Total | # of Carrs | # of Hubs |
| | | | | Total | | | | | | |
| 699 | SIL-WAS | 88 | 728 | 266 | 222 | 37 | TW (82.2) | 14.1% | 5 | 6 |
| | | 84 | 565 | 206 | 190 | 9 | TW (64.8), OZ (18.1) | 4.3 | 2 | 2 |
| | | 79 | 529 | 193 | 181 | 4 | TW (84.6) | 1.9 | — | — |
| 724 | CHI-NYC | 88 | 7,643 | 2,790 | 2,665 | 63 | UA (42.5), AA (22.1), CO (14.7), ML (10.3) | 2.2 | — | — |
| | | 84 | 7,834 | 2,860 | 2,745 | 43 | AA (27.0), AA (26.7), ML (18.7), PE (10.0) | 1.1 | — | — |
| | | 79 | 5,600 | 2,044 | 1,944 | 34 | AA (43.2), TW (27.7), UA (22.0) | 1.6 | — | — |
| 859 | DEN-MSP | 88 | 552 | 202 | 166 | 28 | NW (40.8), AA (35.2) | 13.7 | 3 | 3 |
| | | 84 | 519 | 189 | 145 | 35 | AA (36.4), NW (29.4), RC (10.6) | 18.6 | 4 | 4 |
| | | 79 | 342 | 125 | 113 | 5 | EN (89.8) | 3.9 | 2 | 2 |
| 860 | BOS-CHI | 88 | 2,025 | 739 | 673 | 37 | UA (47.6), AA (18.9), ML (13.3) | 5.0 | 2 | 4 |
| | | 84 | 1,644 | 600 | 539 | 29 | UA (40.8), AA (34.4) | 4.8 | 1 | 1 |
| | | 79 | 1,347 | 492 | 454 | 11 | AA (38.1), UA (27.3), TW (25.9) | 2.3 | — | — |
| 878 | NYC-SIL | 88 | 1,405 | 513 | 450 | 43 | TW (87.1) | 8.4 | 4 | 3 |
| | | 84 | 1,201 | 438 | 401 | 19 | TW (69.2) | 4.2 | 2 | 2 |
| | | 79 | 1,115 | 407 | 373 | 11 | TW (71.9), AA (15.3) | 2.5 | — | — |

Traffic Composition for Selected Large City-Pair Markets
Selected Traffic Data and Competitive Indicators

| Mileage | City-Pair | Year 9/30 | Pgms. Per Day | O&D Traffic (000) 1/ | | | Single-Plane Traffic — Carriers with a 10% or More of Total O&D: Percentages in () | Online connx. Traffic 2/ | | |
|---------|-----------|--------------|---------------------|----------------------|-------|---------------|--|--------------------------|--------------|---|
| | | | | Single Airline | | % of Total | | # of Carrs | # of Hubs | |
| | | | | Total | Plane | | | | | |
| 908 | CHI-DEN | 88 | 1,803 | 658 | 627 | 19 | UA (60.2), CO (19.2) | 2.8% | 1 | 1 |
| | | 84 | 1,435 | 524 | 485 | 25 | UA (36.4), CO (31.9), AA (16.5) | 4.7 | 2 | 2 |
| | | 79 | 1,326 | 484 | 462 | 6 | CO (38.9), UA (35.2), TW (13.2) | 1.1 | — | — |
| 916 | MSP-WAS | 88 | 741 | 271 | 231 | 32 | NW (84.0) | 11.9 | 6 | 7 |
| | | 84 | 668 | 244 | 199 | 37 | NW (67.0), RC (13.7) | 15.3 | 5 | 4 |
| | | 79 | 516 | 188 | 164 | 14 | NW (64.7), UA (12.8) | 7.3 | 2 | 2 |
| 954 | DEN-SFO | 88 | 966 | 353 | 328 | 16 | UA (70.9), CO (22.0) | 4.4 | 2 | 2 |
| | | 84 | 909 | 332 | 306 | 13 | UA (50.5), CO (36.1) | 3.8 | 1 | 1 |
| | | 79 | 819 | 299 | 270 | 13 | UA (54.6), WA (12.4), CO (12.3), TW (10.5) | 3.9 | 2 | 2 |
| 1016 | MSP-NYC | 88 | 1,556 | 568 | 497 | 49 | NW (76.2) | 8.6 | 2 | 2 |
| | | 84 | 1,863 | 680 | 616 | 39 | NW (57.1), PE (20.3), RC (11.9) | 5.7 | 1 | 1 |
| | | 79 | 993 | 363 | 300 | 30 | NW (66.3) | 8.1 | 4 | 4 |
| 1040 | BOS-STL | 88 | 409 | 148 | 121 | 19 | TW (81.5) | 12.9 | 5 | 6 |
| | | 84 | 277 | 101 | 76 | 9 | TW (76.6) | 9.3 | 4 | 3 |
| | | 79 | 310 | 113 | 100 | 4 | TW (52.5), AA (33.8) | 3.3 | 1 | 1 |

Traffic Composition for Selected Large City-Pair Markets
Selected Traffic Data and Competitive Indicators

| Mileage | City-Pair | Year 9/30 | Psgs. Per Day | O&D Traffic (000) 1/ | | Single-Plane Traffic — Carriers with a 10% or More of Total O&D: | | Online comx. Traffic 2/ | |
|---------|-----------|--------------|---------------------|----------------------|-----------------|--|---------------------------------|-------------------------|-----------------------|
| | | | | Total | Single Plane | Airline Comx. | Percentages in () | % of Total | # of Carrs Hubs |
| 1077 | DFW-PIT | 88 | 316 | 115 | 97 | 12 | AA (47.2), AL (36.1) | 10.1% | 5 7 |
| | | 84 | 258 | 94 | 76 | 11 | AA (58.5), AL (22.2) | 11.7 | 5 4 |
| | | 79 | 235 | 86 | 75 | 2 | AA (83.0) | 2.8 | 1 1 |
| 1120 | BOS-MSP | 88 | 624 | 228 | 189 | 31 | NW (82.6) | 13.4 | 5 5 |
| | | 84 | 482 | 176 | 151 | 14 | NW (56.6), RC (29.2) | 8.0 | 3 3 |
| | | 79 | 333 | 122 | 90 | 16 | NW (62.4) | 13.2 | 4 2 |
| 1144 | DEN-DIW | 88 | 542 | 197 | 160 | 30 | UA (41.3), CO (31.1), NW (11.5) | 15.4 | 4 3 |
| | | 84 | 492 | 179 | 148 | 26 | UA (41.7), CO (26.1), FL (11.0) | 14.2 | 5 5 |
| | | 79 | 325 | 119 | 92 | 17 | UA (49.5), FL (26.9) | 14.0 | 3 3 |
| 1156 | DIW-MIA | 88 | 594 | 217 | 152 | 60 | NW (30.3), EA (20.8), DL (17.5) | 27.5 | 9 12 |
| | | 84 | 447 | 163 | 123 | 35 | EA (31.9), DL (21.9), RC (18.0) | 21.1 | 4 4 |
| | | 79 | 697 | 254 | 216 | 28 | DL (47.9), EA (35.9) | 11.1 | 2 1 |
| 1185 | DFW-WAS | 88 | 1,340 | 489 | 419 | 53 | AA (44.2), DL (21.0), EN (18.9) | 10.8 | 4 5 |
| | | 84 | 972 | 355 | 288 | 51 | AA (57.0), EN (13.8) | 14.4 | 5 6 |
| | | 79 | 615 | 224 | 199 | 10 | EN (50.5), AA (37.5) | 4.6 | 2 2 |

Traffic Composition for Selected Large City-Pair Markets
Selected Traffic Data and Competitive Indicators

| Mileage | City-Pair | Year 9/30 | Psgs. Per Day | O&D Traffic (000) 1/ | | | Single-Plane Traffic — Carriers with a 10% or More of Total O&D: | | Online connx. Traffic 2/ | | |
|---------|-----------|--------------|---------------------|----------------------|-----------------|-------------------|--|--|--------------------------|---------------|--------------|
| | | | | Total | Single Plane | Airline Connx. | Percentages in () | | % of Total | # of Carrs | # of Hubs |
| 1310 | DEN-PIT | 88 | 233 | 84 | 69 | 11 | AL (58.7), CO (27.7) | | 2.1% | 3 | 2 |
| | | 84 | 171 | 62 | 48 | 9 | UA (42.1), AL (34.7) | | 0.6 | 5 | 5 |
| | | 79 | 213 | 78 | 59 | 12 | TW (40.0), UA (36.6) | | 0.7 | 2 | 2 |
| 1348 | CLT-DEN | 88 | 116 | 42 | 25 | 16 | PI (57.4) | | 36.5 | 7 | 7 |
| | | 84 | 86 | 31 | 18 | 11 | PI (54.1) | | 35.8 | 4 | 3 |
| | | 79 | 43 | 16 | 2 | 11 | DL (11.4) | | 67.8 | 4 | 2 |
| 1389 | DFW-NYC | 88 | 2,960 | 1,080 | 943 | 92 | AA (53.5), DL (14.7), EN (10.3) | | 8.5 | 3 | 3 |
| | | 84 | 2,652 | 968 | 861 | 37 | AA (56.8), DL (15.6) | | 5.8 | 1 | 1 |
| | | 79 | 1,656 | 604 | 540 | 22 | AA (49.2), EN (38.6) | | 3.6 | 2 | 2 |
| 1476 | DEN-WAS | 88 | 1,039 | 379 | 301 | 65 | UA (47.6), CO (26.1) | | 17.1 | 6 | 8 |
| | | 84 | 768 | 280 | 218 | 49 | UA (34.0), CO (25.3) | | 17.4 | 4 | 4 |
| | | 79 | 602 | 220 | 178 | 25 | UA (45.7), TW (18.4), CO (13.0) | | 11.3 | 4 | 4 |
| 1539 | LAX-MSP | 88 | 837 | 305 | 242 | 51 | NW (77.9) | | 16.8 | 5 | 5 |
| | | 84 | 754 | 275 | 238 | 26 | NW (56.7), RC (21.6) | | 9.4 | 3 | 2 |
| | | 79 | 748 | 273 | 247 | 10 | UA (57.3), NW (33.0) | | 3.8 | 1 | 1 |

Traffic Composition for Selected Large City-Pair Markets
Selected Traffic Data and Competitive Indicators

| Mileage | City-Pair | Year 9/30 | Pgys. Per Day | O&D Traffic (000) 1/ Single Airline | | Single-Plane Traffic — Carriers with a 10% or More of Total O&D: Percentages in () | | Online connx. Traffic 2/ % of # of | | # of Hubs |
|---------|-----------|--------------|---------------------|--|-------|--|---------------------------------|---------------------------------------|-------|--------------|
| | | | | Total | Plane | Total | Plane | Total | Carrs | |
| 1566 | BOS-DFW | 88 | 714 | 261 | 179 | 65 | AA (41.5), DL (20.7) | 24.8% | 10 | 12 |
| | | 84 | 664 | 242 | 205 | 18 | AA (55.7), DL (18.7) | 7.6 | 4 | 7 |
| | | 79 | 362 | 132 | 110 | 11 | AA (72.8), EN (10.1) | 8.3 | 3 | 2 |
| 1630 | DEN-NYC | 88 | 2,075 | 757 | 645 | 84 | UA (46.3), CO (32.8) | 11.0 | 4 | 4 |
| | | 84 | 1,958 | 715 | 593 | 90 | UA (41.0), CO (26.5) | 12.5 | 3 | 3 |
| | | 79 | 1,368 | 499 | 421 | 40 | UA (52.4), TW (28.3) | 7.9 | 3 | 3 |
| 1716 | DEN-MIA | 88 | 444 | 162 | 104 | 51 | CO (36.6), UA (26.5) | 31.7 | 7 | 7 |
| | | 84 | 379 | 139 | 85 | 46 | UA (25.4), JW (15.1) | 33.1 | 6 | 5 |
| | | 79 | 346 | 126 | 94 | 25 | CO (47.5), EN (22.7) | 19.7 | 3 | 3 |
| 1767 | BOS-DEN | 88 | 680 | 248 | 194 | 43 | CO (39.2), UA (38.7) | 17.3 | 7 | 10 |
| | | 84 | 503 | 183 | 128 | 40 | UA (43.5), CO (19.0) | 21.8 | 5 | 6 |
| | | 79 | 378 | 138 | 106 | 19 | UA (47.6), TW (28.7) | 13.7 | 3 | 3 |
| 1988 | DTW-LAX | 88 | 1,294 | 472 | 291 | 162 | NW (54.3) | 34.3 | 9 | 13 |
| | | 84 | 1,358 | 496 | 312 | 169 | UA (31.5), AA (16.0), RC (12.2) | 34.1 | 6 | 6 |
| | | 79 | 988 | 361 | 300 | 39 | AA (52.9), UA (29.7) | 10.7 | 4 | 5 |

Traffic Composition for Selected Large City-Pair Markets
Selected Traffic Data and Competitive Indicators

| Mileage | City-Pair | Year 9/30 | Pgms. Per Day | O&D Traffic (000) 1/ | | Single-Plane Traffic -- Carriers with a 10% or More of Total O&D: Percentages in () | | Online connx. Traffic 2/ | |
|---------|-----------|--------------|---------------------|----------------------|-----------------|---|--|--------------------------|------------------|
| | | | | Total | Single Plane | Total | More of Total O&D: Percentages in () | % of Total | # of Carriers |
| 2126 | CLT-LAX | 88 | 170 | 61 | 33 | 23 | PI (53.8) | 37.18 | 5 |
| | | 84 | 114 | 41 | 13 | 23 | PI (29.6) | 55.6 | 3 |
| | | 79 | 96 | 35 | 17 | 14 | UA (33.3), DL (13.7) | 41.0 | 3 |
| 2259 | PIT-SFO | 88 | 307 | 112 | 68 | 37 | AL (59.7) | 32.5 | 7 |
| | | 84 | 214 | 78 | 43 | 25 | AL (54.7) | 32.5 | 4 |
| | | 79 | 267 | 97 | 73 | 14 | TW (42.2), UA (30.2) | 14.6 | 3 |
| 2300 | LAX-WAS | 88 | 2,242 | 816 | 497 | 279 | UA (22.4), AA (15.6) | 34.2 | 10 |
| | | 84 | 1,572 | 574 | 387 | 151 | UA (39.1), AA (25.0) | 26.2 | 8 |
| | | 79 | 1,281 | 468 | 379 | 42 | AA (38.5), UA (22.9), TW (21.5) | 9.0 | 3 |
| 2467 | LAX-NYC | 88 | 8,366 | 3,052 | 2,453 | 470 | AA (19.5), UA (19.4), TW (13.2), PA (12.0), OO (11.4) | 15.4 | 7 |
| | | 84 | 7,478 | 2,729 | 2,332 | 271 | AA (26.7), UA (18.2), TW (11.7) FE (9.5) | 9.9 | 5 |
| | | 79 | 5,932 | 2,165 | 1,931 | 86 | AA (37.5), TW (22.4), UA (20.0) | 3.9 | 1 |
| 2611 | BOS-LAX | 88 | 1,869 | 682 | 444 | 202 | AA (28.5), UA (14.0), TW (12.6) | 29.6 | 9 |
| | | 84 | 1,271 | 464 | 311 | 110 | AA (27.9), TW (21.4), UA (13.4) | 23.6 | 8 |
| | | 79 | 1,090 | 398 | 314 | 42 | AA (44.1), TW (33.5) | 10.5 | 3 |

1/ Excluding interline connecting traffic.

2/ The number of carriers are those with one percent or more of total traffic.

SOURCE: DOT O&D Survey, Table 12, Years Ended September, 1988, 1984 and 1979.

SINGLE PLANE AND ON-LINE CONNECTING
TRAFFIC SHARES AT SELECTED LARGE
HUB-TO-LARGE-HUB CITY PAIRS

Table II-19

Objective: To evaluate competition in specific city-pair markets.

Data Sources: DOT's O&D Survey, Table 12.

Observations/Interpretation:

- o On-line connecting competition generally is not a significant factor in city-pair markets of less than 1,000 miles. Its competitive significance increases with distance as (1) the number of connecting hub alternatives increase, (2) connecting time constitutes less of a penalty compared with nonstop service, and (3) the number of single-plane competitors decrease.
- o The single-plane competitors are virtually all hubbing carriers.
- o Several very large city pair markets where on-line competition does not appear to be significant, have frequent nonstop service by a single carrier.

Table II-19
Page 1 of 1

Traffic Composition for Selected Large City-Pair Markets
Percentage Shares of Single-Plane and Online Connecting Traffic

| Nonstop Mileage | City-Pair | Percent Single-Plane | | | Percent On-Line Conn. | | | 1988 O&D Traffic | Nonstop Round Trips | Single-Plane Competitors |
|--------------------|-----------|-------------------------|------|------|--------------------------|------|------|------------------------|---------------------------|-----------------------------|
| | | 1988 | 1984 | 1979 | 1988 | 1984 | 1979 | | | |
| 533 | PIT-STL | 91.4 | 90.0 | 93.2 | 2.7 | 1.5 | 1.0 | 70,980 | 8 | 2 |
| 589 | CLT-CHI | 83.4 | 85.3 | 84.3 | 9.7 | 8.2 | 9.1 | 127,600 | 13 | 2 |
| 591 | CHI-WAS | 87.7 | 91.9 | 94.8 | 10.2 | 5.5 | 1.7 | 838,640 | 48 | 3 |
| 647 | DEW-DEN | 97.3 | 95.4 | 95.8 | 0.4 | 0.8 | 1.2 | 453,030 | 21 | 4 |
| 697 | DEN-MSP | 95.6 | 97.1 | 95.7 | 2.1 | 0.6 | 0.7 | 257,060 | 14 | 3 |
| 699 | STL-WAS | 83.4 | 92.1 | 93.8 | 14.1 | 4.3 | 1.9 | 265,600 | 13 | 1 |
| 724 | CHI-NYC | 95.5 | 95.9 | 95.1 | 2.2 | 1.4 | 1.6 | 2,789,550 | 84 | 4 |
| 859 | DEW-MSP | 82.5 | 76.6 | 90.7 | 13.7 | 18.6 | 3.9 | 201,560 | 8 | 2 |
| 860 | BOG-CHI | 91.0 | 89.7 | 92.3 | 5.0 | 4.8 | 2.3 | 739,120 | 21 | 3 |
| 876 | NYC-STL | 87.6 | 91.4 | 91.7 | 8.4 | 4.2 | 2.5 | 512,770 | 15 | 1 |
| 908 | CHI-DEN | 95.2 | 92.4 | 95.4 | 2.8 | 4.7 | 1.1 | 658,250 | 31 | 2 |
| 954 | DEN-SEO | 93.0 | 92.3 | 90.3 | 4.4 | 3.8 | 4.2 | 352,590 | 24 | 2 |
| 916 | MSP-WAS | 85.2 | 81.4 | 87.0 | 11.9 | 15.3 | 7.3 | 270,530 | 9 | 1 |
| 1,016 | MSP-NYC | 87.5 | 90.6 | 82.6 | 8.6 | 5.7 | 8.1 | 567,800 | 14 | 1 |
| 040 | BOG-STL | 81.8 | 75.0 | 88.1 | 12.9 | 9.3 | 3.3 | 148,120 | 5 | 1 |
| 377 | DEW-PIT | 84.5 | 80.9 | 87.2 | 10.1 | 11.7 | 2.8 | 115,010 | 6 | 2 |
| 1,120 | BOG-MSP | 82.2 | 86.0 | 74.1 | 13.4 | 8.0 | 13.2 | 227,940 | 5 | 1 |
| 1,144 | DEN-DTW | 81.2 | 82.5 | 77.5 | 15.4 | 14.2 | 14.0 | 196,620 | 8 | 3 |
| 1,156 | DTW-MIA | 70.1 | 75.1 | 84.8 | 27.5 | 21.1 | 11.1 | 216,780 | 3 | 3 |
| 1,185 | DEW-WAS | 85.5 | 81.2 | 88.6 | 10.8 | 14.4 | 4.6 | 489,220 | 21 | 3 |
| 1,310 | DEN-PIT | 95.6 | 97.1 | 95.7 | 2.1 | 0.6 | 0.7 | 84,170 | 5 | 2 |
| 1,348 | CLT-DEN | 57.7 | 55.9 | 12.7 | 36.5 | 35.8 | 67.8 | 42,470 | 2 | 1 |
| 1,369 | DEW-NYC | 87.2 | 88.9 | 89.3 | 8.5 | 5.8 | 3.6 | 1,080,470 | 23 | 3 |
| 1,476 | DEN-WAS | 79.2 | 77.6 | 80.9 | 17.1 | 17.4 | 11.3 | 379,120 | 10 | 2 |
| 1,539 | LAX-MSP | 79.2 | 86.5 | 90.6 | 16.8 | 9.4 | 3.8 | 305,440 | 8 | 1 |
| 1,566 | BOG-DTW | 69.4 | 84.7 | 83.0 | 24.8 | 7.6 | 8.3 | 260,600 | 7 | 2 |
| 1,630 | DEN-NYC | 85.2 | 83.0 | 84.3 | 11.0 | 12.5 | 7.9 | 757,310 | 21 | 2 |
| 1,716 | DEN-MIA | 63.9 | 61.4 | 74.1 | 31.7 | 33.1 | 19.7 | 161,980 | 2 | 2 |
| 1,767 | BOG-DEN | 78.3 | 69.7 | 76.4 | 17.3 | 21.8 | 13.7 | 248,020 | 6 | 2 |
| 1,909 | DEW-LAX | 63.6 | 62.9 | 83.2 | 34.3 | 34.1 | 10.7 | 472,450 | 4 | 1 |
| 2,126 | CLT-LAX | 54.6 | 30.1 | 47.9 | 37.1 | 55.6 | 41.0 | 61,180 | 2 | 1 |
| 2,259 | PIT-SEO | 60.2 | 55.4 | 75.0 | 32.5 | 32.5 | 14.6 | 112,070 | 2 | 1 |
| 2,300 | LAX-MCS | 60.9 | 67.4 | 81.0 | 34.2 | 26.2 | 9.0 | 816,160 | 10 | 2 |
| 2,467 | LAX-NYC | 60.3 | 85.4 | 80.1 | 15.4 | 9.9 | 3.9 | 3,051,570 | 26 | 5 |
| 2,611 | BOG-LAX | 68.0 | 67.0 | 78.8 | 29.6 | 23.6 | 10.5 | 682,240 | 5 | 3 |

SOURCE: DOT O&D Survey, Table 12, Years Ended September 30, 1988, 1984, and 1979.

NONSTOP SEGMENT LOAD FACTORS IN
CITY-PAIRS WITH AT LEAST ONE
LARGE HUB ENDPOINT

Tables II-20 through II-23

Objective: To determine if any relationship exists between share of market and load factor, and if there are apparent quality-of-service questions raised by market dominance.

Data Sources: DOT's EQ-586 service segment and T-9 data. This set of load factor exhibits focuses on city-pair dominance rather than hub dominance. For city-pairs involving at least one large hub end-point these exhibits show load factors for 1979, 1984 and 1988 segregated by density and by degree of competition. The latter is evaluated in three different ways: (1) the percentage of traffic carried by the city-pair dominant carrier, (2) the number of competitors based on single-plane service, and (3) the number of competitors based on a 10% or greater share of RPM's. Note that previous exhibits have demonstrated a tremendous increase in concentration at large hubs since 1979.

Observations and Interpretations: Tables II-20 through II-22 show that the dominant carriers have a clear load factor advantage over other carriers and that this advantage intensifies with increases in city-pair concentration. The advantage tends to reflect both increases in the dominant carriers' load factors and decreases in the other carriers' load factors as concentration increases. The most dramatic change occurs when the dominant carriers have 90 percent or more of the market. At that point the other carriers' load factors drop off sharply. Significantly, this is not a new phenomenon. This tendency was almost as strong in 1979 and 1984 as in 1988. The big change, however, is the degree of concentration. In terms of number of markets, 1984 is significantly more competitive than 1979 (approximately the same number of highly concentrated city-pairs but many more less concentrated city-pairs) and 1988 significantly less competitive (fewer markets in all concentration categories except the 90 percent or greater category which the number of city-pairs increased by 359 from 578 to 936). Although many of these monopoly city-pairs represent new service, the number of competitive city-pairs actually declined slightly.

This phenomenon (the relationship of load factor advantage to concentration) may be at least a partial explanation for the move to hubbing. Controlling traffic flows at a point allows a carrier to offer more frequency profitably and perhaps gain a disproportionate share of local traffic. Hubbing has proven to be an effective way of controlling traffic flows at a point. This may also explain why very few carriers without a hub at one end-point of a city-pair try to compete, and that even city-pairs with connecting hubs at each end-point are often served by only one of the hubbing carriers.

The load factors in Table II-20 through II-22 show that the load factor advantage related to city-pair dominance is relatively consistent for 1979, 1984 and 1988. What Table II-23 shows is how hubbing has expanded the impact of the phenomenon by greatly increasing concentration. Also, while a great deal of concentration can be attributed to the creation of new service to connecting hubs, the number of competitive markets has actually declined for all traffic density levels except for the very large city-pair markets (500 or more passengers per day).

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1988)

| City-Pair Market Density and Dominant Carrier Share of RPM's | Number of Markets | Load Factor | | |
|--|-------------------------|-------------|--------------|-------|
| | | Total | Carrier | |
| | | | Mkt-Dominant | Other |
| 50 - 100 (Psgrs. Per Day) | | | | |
| LESS THAN 50% | 3 | 41.84 | 48.28 | 37.64 |
| 50 to 59.99 | 5 | 59.22 | 69.19 | 51.20 |
| 60 to 69.99 | 3 | 46.44 | 53.51 | 37.26 |
| 70 to 79.99 | 6 | 40.81 | 41.80 | 38.12 |
| 80 to 89.99 | 5 | 46.90 | 50.88 | 29.95 |
| 90 % OR MORE | 190 | 57.46 | 57.44 | 61.09 |
| 101 - 200 | | | | |
| LESS THAN 50% | 3 | 50.15 | 59.69 | 43.90 |
| 50 to 59.99 | 21 | 59.16 | 61.94 | 56.27 |
| 60 to 69.99 | 28 | 53.91 | 55.29 | 51.61 |
| 70 to 79.99 | 12 | 62.36 | 61.20 | 66.24 |
| 80 to 89.99 | 12 | 56.15 | 58.46 | 44.73 |
| 90 % OR MORE | 314 | 59.18 | 59.30 | 41.87 |
| 201 - 500 | | | | |
| LESS THAN 50% | 41 | 57.51 | 56.83 | 58.00 |
| 50 to 59.99 | 85 | 60.70 | 60.90 | 60.46 |
| 60 to 69.99 | 72 | 56.20 | 58.13 | 53.01 |
| 70 to 79.99 | 54 | 59.07 | 62.87 | 50.62 |
| 80 to 89.99 | 33 | 61.46 | 63.26 | 53.52 |
| 90 % OR MORE | 340 | 62.98 | 63.27 | 39.67 |
| 501 - OR MORE | | | | |
| LESS THAN 50% | 136 | 63.45 | 65.10 | 62.50 |
| 50 to 59.99 | 151 | 62.62 | 64.66 | 60.25 |
| 60 to 69.99 | 96 | 63.63 | 65.93 | 59.83 |
| 70 to 79.99 | 46 | 66.21 | 69.50 | 58.40 |
| 80 to 89.99 | 15 | 63.62 | 66.65 | 51.47 |
| 90 % OR MORE | 92 | 64.88 | 65.22 | 38.49 |
| TOTAL | | | | |
| LESS THAN 50% | 183 | 63.03 | 64.47 | 62.20 |
| 50 to 59.99 | 262 | 62.21 | 63.95 | 60.18 |
| 60 to 69.99 | 199 | 61.98 | 64.19 | 58.32 |
| 70 to 79.99 | 118 | 63.93 | 67.12 | 56.35 |
| 80 to 89.99 | 65 | 61.86 | 64.38 | 51.25 |
| 90 % OR MORE | 936 | 62.19 | 62.42 | 40.49 |

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1988.

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1988)

| City-Pair Market Density and Number of Competitors Based on Nonstop Service 1/ | Number of Markets | Load Factor | | |
|---|-------------------------|-------------|--------------|-------|
| | | Total | Carrier | |
| | | | Mkt-Dominant | Other |
| 50 - 100 (Psgrs. Per Day) | | | | |
| Single Carrier | 26 | 42.63 | 43.01 | 22.03 |
| Total | 26 | 42.63 | 43.01 | 22.03 |
| 101 - 200 | | | | |
| Single Carrier | 184 | 51.95 | 52.43 | 39.71 |
| Two Carriers | 1 | 39.38 | 45.46 | 30.50 |
| Total | 185 | 51.89 | 52.41 | 39.23 |
| 201 - 500 | | | | |
| Single Carrier | 457 | 60.37 | 61.45 | 52.83 |
| Two Carriers | 73 | 52.28 | 54.46 | 49.45 |
| Three Carriers | 8 | 49.31 | 47.77 | 50.37 |
| Total | 538 | 59.10 | 60.70 | 51.58 |
| 501 OR MORE | | | | |
| Single Carrier | 145 | 65.45 | 66.25 | 62.47 |
| Two Carriers | 262 | 63.82 | 66.09 | 60.95 |
| Three Carriers | 89 | 59.34 | 61.73 | 57.22 |
| Four or More | 33 | 63.53 | 64.78 | 63.01 |
| Total | 529 | 63.41 | 65.46 | 60.78 |
| TOTAL | | | | |
| Single Carrier | 812 | 61.90 | 62.56 | 58.42 |
| Two Carriers | 336 | 63.02 | 65.29 | 60.16 |
| Three Carriers | 97 | 59.06 | 61.38 | 57.00 |
| Four or More | 33 | 63.53 | 64.78 | 63.01 |
| Total | 1,278 | 62.14 | 63.51 | 59.80 |

^{1/} Number of competitors with at least one round trip per day.

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1988.

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1988)

| City-Pair Market Density and Number of Competitors Based on RPM Share | 1/ Markets | Load Factor | | |
|--|---------------|-------------|--------------|-------|
| | | Total | Carrier | |
| | | | Mkt-Dominant | Other |
| 50 - 100 (Psgrs. Per Day) | | | | |
| Single Carrier | 191 | 57.44 | 57.42 | 59.36 |
| Two Carriers | 18 | 48.62 | 51.59 | 42.77 |
| Three Carriers | 3 | 40.34 | 54.41 | 30.03 |
| Total | 212 | 56.56 | 57.08 | 43.64 |
| 101 - 200 | | | | |
| Single Carrier | 315 | 59.16 | 59.28 | 40.98 |
| Two Carriers | 67 | 58.54 | 59.58 | 56.52 |
| Three Carriers | 7 | 46.01 | 52.10 | 40.13 |
| Four or More | 1 | 41.43 | 51.44 | 35.56 |
| Total | 390 | 58.91 | 59.28 | 54.23 |
| 201 - 500 | | | | |
| Single Carrier | 341 | 62.95 | 63.25 | 39.44 |
| Two Carriers | 218 | 59.25 | 60.92 | 56.36 |
| Three Carriers | 60 | 57.92 | 58.30 | 57.57 |
| Four or More | 6 | 55.35 | 63.14 | 51.17 |
| Total | 625 | 60.86 | 62.16 | 56.07 |
| 501 OR MORE | | | | |
| Single Carrier | 93 | 64.81 | 65.21 | 37.65 |
| Two Carriers | 270 | 63.91 | 66.29 | 60.31 |
| Three Carriers | 128 | 61.72 | 64.66 | 59.07 |
| Four or More | 45 | 64.69 | 65.09 | 64.51 |
| Total | 536 | 63.61 | 65.65 | 61.00 |
| TOTAL | | | | |
| Single Carrier | 940 | 62.15 | 62.40 | 39.93 |
| Two Carriers | 573 | 62.68 | 64.79 | 59.35 |
| Three Carriers | 198 | 61.15 | 63.78 | 58.78 |
| Four or More | 52 | 64.55 | 65.05 | 64.31 |
| Total | 1,763 | 62.48 | 63.73 | 60.16 |

1/ Number of carriers with a ten percent or greater share of RPM's.

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September 30, 1988.

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1984)

| City-Pair Market Density and Dominant Carrier Share of RPM's | Number of Markets | Load Factor | | |
|--|-------------------------|-------------|--------------|-------|
| | | Total | Carrier | |
| | | | Mkt-Dominant | Other |
| 50 - 100 (Psgrs. Per Day) | | | | |
| LESS THAN 50% | 5 | 33.88 | 37.30 | 31.59 |
| 50 to 59.99 | 8 | 43.28 | 42.77 | 43.94 |
| 60 to 69.99 | 7 | 39.91 | 42.04 | 36.43 |
| 70 to 79.99 | 8 | 52.10 | 52.50 | 50.86 |
| 80 to 89.99 | 7 | 50.51 | 50.79 | 49.19 |
| 90 % OR MORE | 173 | 52.38 | 52.44 | 41.86 |
| 101 - 200 | | | | |
| LESS THAN 50% | 13 | 53.51 | 53.68 | 53.39 |
| 50 to 59.99 | 42 | 51.20 | 51.38 | 50.98 |
| 60 to 69.99 | 27 | 51.55 | 51.87 | 50.98 |
| 70 to 79.99 | 30 | 50.40 | 51.95 | 46.09 |
| 80 to 89.99 | 29 | 53.58 | 55.91 | 43.09 |
| 90 % OR MORE | 218 | 56.94 | 57.03 | 47.09 |
| 201 - 500 | | | | |
| LESS THAN 50% | 47 | 54.15 | 55.72 | 53.06 |
| 50 to 59.99 | 107 | 55.95 | 57.06 | 54.66 |
| 60 to 69.99 | 79 | 56.57 | 59.43 | 52.08 |
| 70 to 79.99 | 51 | 59.80 | 62.19 | 53.81 |
| 80 to 89.99 | 45 | 61.32 | 64.08 | 49.81 |
| 90 % OR MORE | 154 | 61.02 | 61.52 | 39.18 |
| 501 - OR MORE | | | | |
| LESS THAN 50% | 132 | 60.94 | 62.53 | 59.90 |
| 50 to 59.99 | 118 | 58.04 | 60.56 | 55.32 |
| 60 to 69.99 | 90 | 58.38 | 62.70 | 51.73 |
| 70 to 79.99 | 34 | 59.19 | 64.24 | 48.19 |
| 80 to 89.99 | 17 | 58.43 | 61.70 | 45.45 |
| 90 % OR MORE | 33 | 68.73 | 69.05 | 56.79 |
| TOTAL | | | | |
| LESS THAN 50% | 197 | 60.23 | 61.78 | 59.21 |
| 50 to 59.99 | 275 | 57.16 | 59.18 | 54.92 |
| 60 to 69.99 | 203 | 57.47 | 61.19 | 51.67 |
| 70 to 79.99 | 123 | 58.47 | 62.07 | 49.99 |
| 80 to 89.99 | 98 | 58.98 | 61.72 | 47.54 |
| 90 % OR MORE | 578 | 60.62 | 60.86 | 46.81 |

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1984.

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1984)

| City-Pair Market Density and Number of Competitors Based on Nonstop Service 1/ | Number of Markets | Load Factor | | |
|---|-------------------------|-------------|--------------|-------|
| | | Total | Carrier | |
| | | | Mkt-Dominant | Other |
| 50 - 100 (Psgrs. Per Day) | | | | |
| Single Carrier | 17 | 46.56 | 47.50 | 34.11 |
| Total | 17 | 46.56 | 47.50 | 34.11 |
| 101 - 200 | | | | |
| Single Carrier | 133 | 51.63 | 52.59 | 38.87 |
| Two Carriers | 2 | 48.62 | 50.83 | 43.56 |
| Total | 135 | 51.61 | 52.58 | 38.99 |
| 201 - 500 | | | | |
| Single Carrier | 282 | 59.05 | 61.23 | 51.13 |
| Two Carriers | 86 | 50.65 | 52.48 | 48.47 |
| Three Carriers | 8 | 46.88 | 50.29 | 43.97 |
| Total | 376 | 56.88 | 59.58 | 49.84 |
| 501 OR MORE | | | | |
| Single Carrier | 79 | 62.92 | 64.40 | 60.52 |
| Two Carriers | 199 | 58.85 | 61.54 | 55.26 |
| Three Carriers | 100 | 59.64 | 61.76 | 57.85 |
| Four or More | 31 | 55.95 | 59.98 | 53.72 |
| Total | 409 | 59.52 | 62.10 | 56.72 |
| TOTAL | | | | |
| Single Carrier | 511 | 60.07 | 61.40 | 56.58 |
| Two Carriers | 287 | 57.83 | 60.45 | 54.37 |
| Three Carriers | 108 | 59.42 | 61.56 | 57.61 |
| Four or More | 31 | 55.95 | 59.98 | 53.86 |
| Total | 937 | 58.77 | 61.03 | 55.76 |

^{1/} Number of competitors with at least one round trip per day.

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1984.

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1984)

| City-Pair Market Density and Number of Competitors Based on RPM Share | 1/ |
|--|--|
|--|--|

^{1/} Number of carriers with a ten percent or greater share of RPM's.

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September 30, 1984.

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1979)

| City-Pair Market Density and Dominant Carrier Share of RPM's | Number of Markets | Load Factor | | |
|--|-------------------------|-------------|--------------|-------|
| | | Total | Carrier | |
| | | | Mkt-Dominant | Other |
| 50 - 100 (Psgrs. Per Day) | | | | |
| LESS THAN 50% | 10 | 40.06 | 38.47 | 41.56 |
| 50 to 59.99 | 13 | 52.77 | 54.27 | 51.03 |
| 60 to 69.99 | 20 | 48.76 | 52.92 | 42.74 |
| 70 to 79.99 | 22 | 54.13 | 58.87 | 43.23 |
| 80 to 89.99 | 19 | 60.50 | 64.00 | 45.99 |
| 90 % OR MORE | 233 | 61.32 | 61.52 | 45.84 |
| 101 - 200 | | | | |
| LESS THAN 50% | 14 | 46.64 | 50.08 | 44.33 |
| 50 to 59.99 | 35 | 58.21 | 58.46 | 57.91 |
| 60 to 69.99 | 35 | 60.70 | 65.48 | 53.43 |
| 70 to 79.99 | 42 | 57.19 | 61.79 | 46.66 |
| 80 to 89.99 | 32 | 60.05 | 62.60 | 48.41 |
| 90 % OR MORE | 177 | 64.69 | 64.94 | 38.33 |
| 201 - 500 | | | | |
| LESS THAN 50% | 23 | 53.09 | 59.78 | 48.46 |
| 50 to 59.99 | 84 | 61.11 | 61.49 | 60.65 |
| 60 to 69.99 | 68 | 62.31 | 64.48 | 58.68 |
| 70 to 79.99 | 61 | 63.77 | 67.49 | 54.94 |
| 80 to 89.99 | 64 | 63.25 | 64.79 | 55.94 |
| 90 % OR MORE | 138 | 68.29 | 69.04 | 42.81 |
| 501 - OR MORE | | | | |
| LESS THAN 50% | 89 | 64.65 | 66.80 | 63.23 |
| 50 to 59.99 | 96 | 64.90 | 67.36 | 62.21 |
| 60 to 69.99 | 71 | 63.78 | 66.45 | 59.42 |
| 70 to 79.99 | 34 | 64.99 | 67.39 | 59.28 |
| 80 to 89.99 | 16 | 66.33 | 68.60 | 56.53 |
| 90 % OR MORE | 25 | 75.15 | 76.29 | 49.68 |
| TOTAL | | | | |
| LESS THAN 50% | 136 | 63.75 | 66.09 | 62.20 |
| 50 to 59.99 | 228 | 63.42 | 65.14 | 61.48 |
| 60 to 69.99 | 194 | 62.84 | 65.55 | 58.43 |
| 70 to 79.99 | 159 | 63.23 | 66.50 | 55.49 |
| 80 to 89.99 | 131 | 63.45 | 65.36 | 54.72 |
| 90 % OR MORE | 573 | 67.04 | 67.55 | 44.92 |

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1984.

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1979)

| City-Pair Market Density and Number of Competitors Based on Nonstop Service 1/ | Number of Markets | Load Factor | | |
|---|-------------------------|-------------|--------------|-------|
| | | Total | Carrier | |
| | | | Mkt-Dominant | Other |
| 50 - 100 (Psgrs. Per Day) | | | | |
| Single Carrier | 15 | 59.78 | 60.10 | 53.42 |
| Total | 15 | 59.78 | 60.10 | 53.42 |
| 101 - 200 | | | | |
| Single Carrier | 110 | 58.80 | 60.90 | 39.33 |
| Two Carriers | 1 | 34.99 | 64.28 | 20.16 |
| Total | 111 | 58.71 | 60.91 | 38.82 |
| 201 - 500 | | | | |
| Single Carrier | 295 | 64.10 | 66.28 | 56.38 |
| Two Carriers | 49 | 61.12 | 62.99 | 58.54 |
| Three Carriers | 1 | 20.86 | 26.08 | 17.75 |
| Total | 345 | 63.52 | 65.78 | 57.26 |
| 501 OR MORE | | | | |
| Single Carrier | 62 | 68.48 | 71.15 | 62.38 |
| Two Carriers | 205 | 63.51 | 65.88 | 60.42 |
| Three Carriers | 50 | 65.98 | 68.57 | 64.29 |
| Four or More | 10 | 61.56 | 70.65 | 57.54 |
| Total | 327 | 64.99 | 67.62 | 62.05 |
| TOTAL | | | | |
| Single Carrier | 482 | 65.33 | 67.47 | 58.86 |
| Two Carriers | 255 | 63.28 | 65.60 | 60.24 |
| Three Carriers | 51 | 63.28 | 68.54 | 64.25 |
| Four or More | 10 | 61.56 | 70.65 | 57.54 |
| Total | 798 | 64.53 | 66.87 | 61.26 |

^{1/} Number of competitors with at least one round trip per day.

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1979.

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1979)

| City-Pair Market Density and Number of Competitors Based on RPM Share | 1/ Number of Markets | Load Factor | | |
|--|-------------------------------|-------------|--------------|-------|
| | | Total | Carrier | |
| | | | Mkt-Dominant | Other |
| 50 - 100 (Psgrs. Per Day) | | | | |
| Single Carrier | 233 | 61.32 | 61.52 | 45.84 |
| Two Carriers | 72 | 54.01 | 58.42 | 45.27 |
| Three Carriers | 10 | 41.60 | 40.67 | 45.57 |
| Four or More | 2 | 19.11 | 25.90 | 16.80 |
| Total | 317 | 58.58 | 60.42 | 44.81 |
| 101 - 200 | | | | |
| Single Carrier | 181 | 64.58 | 64.92 | 37.12 |
| Two Carriers | 134 | 59.18 | 62.17 | 53.81 |
| Three Carriers | 18 | 48.66 | 52.02 | 45.57 |
| Four or More | 2 | 36.46 | 40.32 | 34.16 |
| Total | 335 | 61.09 | 63.42 | 52.40 |
| 201 - 500 | | | | |
| Single Carrier | 141 | 67.85 | 68.77 | 45.88 |
| Two Carriers | 260 | 62.49 | 64.25 | 59.17 |
| Three Carriers | 30 | 56.16 | 62.55 | 50.29 |
| Four or More | 7 | 42.89 | 50.60 | 39.09 |
| Total | 438 | 62.97 | 65.37 | 57.36 |
| 501 OR MORE | | | | |
| Single Carrier | 27 | 75.09 | 76.34 | 52.81 |
| Two Carriers | 199 | 63.91 | 66.04 | 60.77 |
| Three Carriers | 87 | 64.01 | 66.79 | 62.04 |
| Four or More | 18 | 71.42 | 76.03 | 68.28 |
| Total | 331 | 65.03 | 65.37 | 57.36 |
| TOTAL | | | | |
| Single Carrier | 582 | 66.96 | 67.57 | 47.15 |
| Two Carriers | 665 | 62.85 | 64.91 | 59.48 |
| Three Carriers | 145 | 63.05 | 65.99 | 60.91 |
| Four or More | 29 | 70.41 | 75.25 | 67.14 |
| Total | 1,421 | 63.89 | 66.08 | 60.49 |

1/ Number of carriers with a ten percent or greater share of RPM's.

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September 30, 1988.

City-Pair Concentration
City Pairs With at Least One Large Hub Endpoint
Years Ended September 1988, 1984, and 1979

| Density and Dominant Carrier Percentage of City-Pair RPM's 1/ | Number of Markets | | | Percent Distribution | | |
|---|-------------------|-------|-------|----------------------|------|------|
| | 1988 | 1984 | 1979 | 1988 | 1984 | 1979 |
| 50 - 100 (Pgms. per day) | | | | | | |
| Less Than 50% | 3 | 5 | 10 | 1 | 2 | 3 |
| 50 to 59.99 | 5 | 8 | 13 | 2 | 4 | 4 |
| 60 to 69.99 | 3 | 7 | 20 | 1 | 3 | 7 |
| 70 to 79.99 | 6 | 8 | 22 | 3 | 4 | 7 |
| 80 to 89.99 | 5 | 7 | 19 | 2 | 3 | 6 |
| 90 to 99.99 | 190 | 173 | 233 | 90 | 83 | 74 |
| Total | 212 | 208 | 317 | 100 | 100 | 100 |
| 101 - 200 | | | | | | |
| Less Than 50% | 3 | 13 | 14 | 1 | 4 | 4 |
| 50 to 59.99 | 21 | 42 | 35 | 5 | 12 | 10 |
| 60 to 69.99 | 28 | 27 | 35 | 7 | 8 | 10 |
| 70 to 79.99 | 12 | 30 | 42 | 3 | 8 | 13 |
| 80 to 89.99 | 12 | 29 | 32 | 3 | 8 | 10 |
| 90 to 99.99 | 314 | 218 | 177 | 81 | 61 | 53 |
| Total | 390 | 359 | 335 | 100 | 100 | 100 |
| 201 - 500 | | | | | | |
| Less Than 50% | 41 | 47 | 23 | 7 | 10 | 5 |
| 50 to 59.99 | 85 | 107 | 84 | 14 | 22 | 19 |
| 60 to 69.99 | 72 | 79 | 68 | 12 | 16 | 16 |
| 70 to 79.99 | 54 | 51 | 61 | 9 | 11 | 14 |
| 80 to 89.99 | 33 | 45 | 64 | 5 | 9 | 15 |
| 90 to 99.99 | 340 | 154 | 138 | 54 | 32 | 32 |
| Total | 625 | 483 | 438 | 100 | 100 | 100 |
| 501 or More | | | | | | |
| Less Than 50% | 136 | 132 | 89 | 25 | 31 | 27 |
| 50 to 59.99 | 151 | 118 | 96 | 28 | 28 | 29 |
| 60 to 69.99 | 96 | 90 | 71 | 18 | 21 | 21 |
| 70 to 79.99 | 46 | 34 | 34 | 9 | 8 | 10 |
| 80 to 89.99 | 15 | 17 | 16 | 3 | 4 | 5 |
| 90 to 99.99 | 92 | 33 | 25 | 17 | 8 | 8 |
| Total | 536 | 424 | 331 | 100 | 100 | 100 |
| TOTAL | | | | | | |
| Less Than 50% | 183 | 197 | 136 | 10 | 13 | 10 |
| 50 to 59.99 | 262 | 275 | 228 | 15 | 19 | 16 |
| 60 to 69.99 | 199 | 203 | 194 | 12 | 14 | 14 |
| 70 to 79.99 | 118 | 123 | 159 | 7 | 8 | 11 |
| 80 to 89.99 | 65 | 98 | 131 | 4 | 7 | 9 |
| 90 to 99.99 | 936 | 578 | 573 | 53 | 39 | 40 |
| Total | 1,763 | 1,474 | 1,421 | 100 | 100 | 100 |

1/ Dominance based on share of city-pair traffic, not hub dominance.

SOURCE: ER-586 Service Segment and T-9 Data for Years Ended September 1988, 1984, and 1979.

NONSTOP LOAD FACTORS AT INDIVIDUAL LARGE HUB CITY PAIRS
AND FOR GROUPS OF LARGE HUBS (GROUPED BY SHARE
OF SINGLE-CARRIER DOMINANCE)

Tables II-24 Through II-31

Objective: To determine if any relationship exists between hub dominance and load factor and if there are any apparent quality of service questions raised by hub dominance.

Data Sources: DOT's ER-586 service segment and schedule T-9 data. These exhibits focus on the relationship of load factor to degree of hub dominance. Tables II-24 through II-28 examine load factors at individual hubs. Tables II-29 through II-31 examine load factors at groups of hubs, also segregated on the basis of single-carrier dominance, but with greater detail about the number of competitors.

Observations/Interpretation: Hub concentration results from an accumulation of concentrated individual city-pairs. On the basis of the load factor advantage dominant carriers have in individual city pairs, we would expect hub-dominant carriers to have a significant load factor advantage over other carriers. This is precisely what the data reflect (Tables II-24 through II-26). Considering that a swing of only one or two load factor points can have a tremendous impact on a carrier's profitability, the nine percentage point average load factor advantage for concentrated hub carriers over their competitors is quite large.

Much of the overall load factor advantage for the dominant carriers stems from the higher load factors in monopoly markets. Even in competitive markets, however, where the competing service is typically by other hubbing carriers who tend to offer equivalent frequency, the hubbing carrier at the highly concentrated hub generally has a significant load factor advantage, on average. It is not clear from the level of detail now available whether this load factor advantage stems from greater flow traffic, or an imbalance in the carriage of local traffic. In either event, this may offer an explanation of why concentrated hubs tend to become more-and-more concentrated over time. The dominant carrier is able to operate more flights profitably. The weaker carriers, in terms of load factor, have to choose between cutting frequency or reducing yield (to boost load factor) or exiting the market. They apparently have made the latter choice in many instances at concentrated hubs.

Curiously, overall average load factors in city-pair markets at concentrated hubs are lower than for those at unconcentrated hubs. This is not simply a function of differences in the particular

markets involved, because it systematically stems from much lower load factors in competitive markets. One explanation for this could be that the hubbing carriers offer quality service (frequency) in order to maintain their dominant position. If so, this clearly offers a short-term benefit to travelers in those markets but the long-run impact is less clear. The result may be to eventually drive out more competition, as the increasing dominance in recent years at many large hubs suggests. There is probably a limit to the dominance, however, since connecting hubs are located at important cities which are likely to be retained as spokes for many other hubbing carriers.

The higher load factors of hub-dominant carriers at their hubs are consistent with more attractive service.

Tables II-29 through II-31 show that load factor increases with city-pair density, without regard to degree of concentration. Nevertheless, the hub-dominant carriers' load factor advantage does not depend on city-pair density. Similarly, the number of competitors affects load factors in all but the largest unconcentrated city-pairs. This does not explain why load factors in competitive markets tend to be lower at more concentrated hubs where the average number of competitors is lower than at unconcentrated hubs.

Table II-27 shows that the load factor differentials are quite large at the most concentrated hubs, but not at medium concentrated hubs. The latter is affected by the fact that three of the four medium concentrated hubs are two-carrier hubs.

Table II-28 shows that concentrated hubs accounted for about 20 percent of the city-pairs involving nonstop service to a large hub.

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September 1988)

| Dominant Carriers %/ Hub/Density | Number of Markets | Load Factor | | |
|-------------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| <u>75% or More Share:</u> | | | | |
| CHARLOTTE (PI-91.6%) | | | | |
| Single Carrier | 52 | 65.22 | 65.67 | 30.51 |
| Multi-Carrier | 8 | 58.16 | 59.80 | 55.74 |
| Total | 60 | 63.64 | 64.80 | 53.23 |
| PITTSBURGH (AL-85.4%) | | | | |
| Single Carrier | 56 | 69.72 | 70.24 | 30.67 |
| Multi-Carriers | 16 | 55.82 | 62.75 | 48.89 |
| Total | 72 | 64.57 | 68.52 | 48.11 |
| MEMPHIS (NW-83.6%) | | | | |
| Single Carrier | 51 | 59.00 | 59.17 | 52.61 |
| Multi-Carriers | 8 | 49.23 | 51.46 | 47.72 |
| Total | 59 | 57.11 | 58.47 | 48.47 |
| ST. LOUIS (TW-82.8%) | | | | |
| Single Carrier | 56 | 62.52 | 62.55 | 33.56 |
| Multi-Carriers | 20 | 56.40 | 57.61 | 54.65 |
| Total | 76 | 60.55 | 61.46 | 54.56 |
| SALT LAKE CITY (DL-79.3%) | | | | |
| Single Carrier | 39 | 55.19 | 55.34 | 35.33 |
| Multi-Carriers | 10 | 52.90 | 53.79 | 51.96 |
| Total | 49 | 54.31 | 54.96 | 51.55 |
| MINNEAPOLIS-ST. PAUL (NW-77.6%) | | | | |
| Single Carrier | 53 | 63.93 | 64.33 | 53.62 |
| Multi-Carriers | 13 | 57.20 | 56.99 | 57.36 |
| Total | 66 | 62.00 | 63.24 | 56.84 |
| SUB-TOTAL: | | | | |
| Single Carrier | 307 | 62.83 | 63.08 | 47.07 |
| Multi-Carrier | 75 | 55.49 | 57.66 | 53.22 |
| Total | 382 | 60.57 | 62.06 | 52.79 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September 1988)

| Dominant Carrier %/ Hub/Density | Number of Markets | Load Factor | | |
|------------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| <u>60 to 74.99% Share:</u> | | | | |
| -0- | | | | |
| <u>50 to 59.99% Share:</u> | | | | |
| DETROIT (NW-57.7%) | | | | |
| Single Carrier | 37 | 61.13 | 61.83 | 55.60 |
| Multi-Carriers | 24 | 61.64 | 62.92 | 60.76 |
| Total | 61 | 61.43 | 62.26 | 60.14 |
| ATLANTA (DL-57.1%) | | | | |
| Single Carrier | 34 | 60.85 | 60.32 | 62.41 |
| Multi-Carriers | 57 | 59.97 | 60.08 | 59.83 |
| Total | 91 | 60.09 | 60.13 | 60.03 |
| DALLAS (AA-54.9%) | | | | |
| Single Carrier | 42 | 61.37 | 64.56 | 55.57 |
| Multi-Carriers | 57 | 61.81 | 65.88 | 56.95 |
| Total | 99 | 61.74 | 65.65 | 56.78 |
| HOUSTON (CO-50.5%) | | | | |
| Single Carrier | 65 | 58.03 | 58.88 | 55.70 |
| Multi-Carriers | 16 | 57.00 | 56.52 | 57.40 |
| Total | 81 | 57.67 | 58.29 | 56.58 |
| SUB-TOTAL: | | | | |
| Single Carrier | 178 | 59.85 | 60.94 | 56.71 |
| Multi-Carriers | 154 | 60.74 | 62.84 | 58.44 |
| Total | 332 | 60.51 | 62.20 | 58.16 |
| <u>Less Than 50% Share:</u> | | | | |
| CHICAGO (UA-46.2%) | | | | |
| Single Carrier | 58 | 62.10 | 67.72 | 56.60 |
| Multi-Carriers | 80 | 62.88 | 67.56 | 58.36 |
| Total | 138 | 62.79 | 67.57 | 58.15 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September 1988)

| Dominant Carrier %/ Hub/Density | Number of Markets | Load Factor | | |
|------------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| <u>Less Than 50% Share:</u> | | | | |
| PHOENIX (HP-44.4%) | | | | |
| Single Carrier | 33 | 63.52 | 57.43 | 67.77 |
| Multi-Carriers | 21 | 63.27 | 57.40 | 65.68 |
| Total | 54 | 63.34 | 57.41 | 66.22 |
| ORANGE COUNTY (AA-41.9%) | | | | |
| Single Carrier | 6 | 57.00 | 83.34 | 56.99 |
| Multi-Carriers | 8 | 65.81 | 68.86 | 60.80 |
| Total | 14 | 63.02 | 68.86 | 58.70 |
| DENVER (UA-43.3%) | | | | |
| Single Carrier | 21 | 56.29 | 59.20 | 55.56 |
| Multi-Carriers | 61 | 62.48 | 67.96 | 58.27 |
| Total | 82 | 62.06 | 67.67 | 58.01 |
| MIAMI (EA-40.6%) | | | | |
| Single Carrier | 11 | 59.91 | 43.16 | 60.97 |
| Multi-Carriers | 26 | 62.49 | 64.72 | 60.59 |
| Total | 37 | 62.16 | 64.32 | 60.67 |
| PHILADELPHIA (AL-38.7%) | | | | |
| Single Carrier | 21 | 61.07 | 65.36 | 59.12 |
| Multi-Carriers | 27 | 60.20 | 60.08 | 60.25 |
| Total | 48 | 60.40 | 61.40 | 60.01 |
| FT. LAUDERDALE (DL-35.3%) | | | | |
| Single Carrier | 14 | 65.79 | 65.18 | 65.84 |
| Multi-Carriers | 15 | 62.01 | 60.90 | 63.00 |
| Total | 29 | 62.86 | 61.13 | 63.95 |
| SAN FRANCISCO (UA-34.8%) | | | | |
| Single Carrier | 16 | 66.43 | 61.40 | 67.55 |
| Multi-Carriers | 35 | 65.31 | 69.74 | 62.81 |
| Total | 51 | 65.46 | 69.14 | 63.59 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September 1988)

| Dominant Carrier %/ Hub/Density | Number of Markets | Load Factor | | |
|------------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| <u>Less Than 50% Share:</u> | | | | |
| HONOLULU (HA-34.2%) | | | | |
| Single Carrier | 7 | 71.20 | 69.25 | 71.56 |
| Multi-Carriers | 11 | 69.72 | 69.87 | 69.70 |
| Total | 18 | 69.87 | 69.78 | 69.88 |
| LAS VEGAS (HP-33.6%) | | | | |
| Single Carrier | 19 | 64.72 | 59.13 | 68.57 |
| Multi-Carriers | 18 | 67.91 | 57.37 | 70.69 |
| Total | 37 | 67.04 | 58.12 | 70.23 |
| KANSAS CITY (EA-31.0%) | | | | |
| Single Carrier | 12 | 57.98 | 61.55 | 54.51 |
| Multi-Carriers | 24 | 64.14 | 68.01 | 61.89 |
| Total | 36 | 63.02 | 66.53 | 60.78 |
| LONG BEACH (AS-30.5%) | | | | |
| Single Carrier | 2 | 45.23 | 41.90 | 50.72 |
| Multi-Carriers | 4 | 49.55 | 38.79 | 50.64 |
| Total | 6 | 49.09 | 40.17 | 50.65 |
| SEATTLE (UA-25.6%) | | | | |
| Single Carrier | 16 | 61.82 | 60.79 | 61.86 |
| Multi-Carriers | 22 | 61.06 | 67.73 | 58.27 |
| Total | 38 | 61.20 | 67.52 | 59.13 |
| ORLANDO (DL-24.9%) | | | | |
| Single Carrier | 17 | 67.77 | 62.99 | 68.98 |
| Multi-Carriers | 28 | 61.15 | 56.62 | 63.39 |
| Total | 45 | 62.60 | 57.55 | 64.79 |
| BURBANK (PS-23.8%) | | | | |
| Single Carrier | 6 | 52.44 | | 52.44 |
| Multi-Carriers | 8 | 47.18 | 53.93 | 45.14 |
| Total | 14 | 49.07 | 53.93 | 48.23 |
| WASHINGTON, D.C. (UA-21.7%) | | | | |
| Single Carrier | 43 | 56.24 | 45.44 | 57.18 |
| Multi-Carriers | 41 | 60.81 | 64.49 | 58.69 |
| Total | 84 | 59.58 | 62.98 | 58.31 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September 1988)

| Dominant Carrier %/ Hub/Density | Number of Markets | Load Factor | | |
|------------------------------------|-------------------------|-------------|---------|-------|
| | | Total | Carrier | |
| | Hub-Dominant | | Other | |
| <u>Less Than 50% Share:</u> | | | | |
| TAMPA/ST. PETERSBURG (EA-20.7%) | | | | |
| Single Carrier | 22 | 60.22 | 58.22 | 60.34 |
| Multi-Carriers | 17 | 61.10 | 60.37 | 61.35 |
| Total | 39 | 60.75 | 60.10 | 60.89 |
| OAKLAND (AA-20.1%) | | | | |
| Single Carrier | 8 | 60.52 | 57.35 | 61.74 |
| Multi-Carriers | 8 | 54.31 | 49.45 | 55.22 |
| Total | 16 | 57.26 | 54.28 | 58.07 |
| BOSTON (EA-18.8%) | | | | |
| Single Carrier | 21 | 61.77 | 60.91 | 61.81 |
| Multi-Carriers | 23 | 60.87 | 60.55 | 60.94 |
| Total | 44 | 61.11 | 60.58 | 61.19 |
| NEW YORK (CO-18.6%) | | | | |
| Single Carrier | 69 | 60.69 | 60.12 | 60.95 |
| Multi-Carriers | 71 | 62.34 | 58.63 | 63.06 |
| Total | 140 | 62.00 | 59.13 | 62.69 |
| LOS ANGELES (UA-18.0%) | | | | |
| Single Carrier | 20 | 67.61 | 59.42 | 67.90 |
| Multi-Carriers | 32 | 66.02 | 68.34 | 65.28 |
| Total | 52 | 66.30 | 68.06 | 65.84 |
| SAN DIEGO (AA-13.9%) | | | | |
| Single Carrier | 13 | 63.79 | 100.00 | 63.79 |
| Multi-Carriers | 14 | 65.83 | 70.85 | 63.88 |
| Total | 27 | 65.17 | 70.85 | 63.85 |
| <u>SUB-TOTAL:</u> | | | | |
| Single Carrier | 455 | 62.58 | 61.38 | 62.89 |
| Multi-Carriers | 594 | 63.46 | 65.67 | 62.46 |
| Total | 1,049 | 63.30 | 65.11 | 62.55 |

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1988.

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September, 1984)

| <u>Dominant Carrier %/ Hub/Density</u> | <u>Number of Markets</u> | <u>Load Factor</u> | | |
|--|----------------------------------|--------------------|---------------------------------|--------------|
| | | <u>Total</u> | <u>Carrier Hub-Dominant</u> | <u>Other</u> |
| <u>75% or More Share:</u> | | | | |
| PITTSBURGH (AL-77.6%) | | | | |
| Single Carrier | 46 | 59.90 | 60.67 | 46.52 |
| Multi-Carriers | 14 | 61.82 | 66.10 | 56.91 |
| Total | 60 | 60.84 | 62.59 | 55.79 |
| Sub-Total: | | | | |
| Single Carrier | 46 | 59.90 | 60.67 | 46.52 |
| Multi-Carriers | 14 | 61.82 | 66.10 | 56.91 |
| Total | 60 | 60.84 | 62.59 | 55.79 |
| <u>60 to 74.99% Share:</u> | | | | |
| CHARLOTTE (PI-74.4%) | | | | |
| Single Carrier | 30 | 59.69 | 60.42 | 45.84 |
| Multi-Carriers | 17 | 54.09 | 57.48 | 50.25 |
| Total | 47 | 56.45 | 59.14 | 49.93 |
| SALT LAKE CITY (WA-70.6%) | | | | |
| Single Carrier | 26 | 54.52 | 55.12 | 47.94 |
| Multi-Carriers | 11 | 54.88 | 57.39 | 52.81 |
| Total | 37 | 54.70 | 55.86 | 52.15 |
| Sub-Total: | | | | |
| Single Carrier | 56 | 56.47 | 57.16 | 47.38 |
| Multi-Carriers | 28 | 54.52 | 57.43 | 51.73 |
| Total | 84 | 55.44 | 57.26 | 51.25 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September, 1984)

| Dominant Carrier %/ Hub/Density | Number of Markets | Load Factor | | |
|------------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| <u>50 to 59.99 % Share:</u> | | | | |
| ST. LOUIS (TW-58.1%) | | | | |
| Single Carrier | 36 | 54.21 | 54.31 | 53.38 |
| Multi-Carriers | 33 | 56.87 | 59.15 | 54.18 |
| Total | 69 | 55.76 | 56.53 | 54.07 |
| BURBANK (PS-52.5%) | | | | |
| Single Carrier | 7 | 58.24 | 54.06 | 59.35 |
| Multi-Carriers | 5 | 49.57 | 51.39 | 47.20 |
| Total | 12 | 52.87 | 51.88 | 53.62 |
| ATLANTA (DL-52.2%) | | | | |
| Single Carrier | 38 | 55.81 | 56.74 | 54.71 |
| Multi-Carriers | 60 | 53.48 | 52.68 | 54.29 |
| Total | 98 | 53.71 | 53.11 | 54.33 |
| DALLAS (AA-50.2%) | | | | |
| Single Carrier | 30 | 68.29 | 70.82 | 62.61 |
| Multi-Carriers | 58 | 55.80 | 63.85 | 48.43 |
| Total | 88 | 57.84 | 65.39 | 49.89 |
| Sub-Total: | | | | |
| Single Carrier | 111 | 59.67 | 60.24 | 58.16 |
| Multi-Carriers | 156 | 54.88 | 58.23 | 51.57 |
| Total | 267 | 55.79 | 58.74 | 52.32 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September, 1984)

| Dominant Carrier %/ Hub/Density | Number of Markets | Load Factor | | |
|------------------------------------|-------------------------|-------------|--------------|-------|
| | | Total | Carrier | |
| | | | Hub-Dominant | Other |
| <u>Less Than 50% Share:</u> | | | | |
| MINNEAPOLIS-ST. PAUL (NW-47.3%) | | | | |
| Single Carrier | 16 | 55.87 | 54.83 | 57.23 |
| Multi-Carriers | 31 | 55.14 | 57.03 | 52.90 |
| Total | 47 | 55.21 | 56.78 | 53.35 |
| MEMPHIS (RC-46.0%) | | | | |
| Single Carrier | 19 | 54.60 | 56.75 | 51.74 |
| Multi-Carriers | 19 | 43.98 | 43.99 | 43.96 |
| Total | 38 | 47.16 | 48.75 | 45.81 |
| FT. LAUDERDALE (DL-44.2%) | | | | |
| Single Carrier | 5 | 66.06 | 65.02 | 67.03 |
| Multi-Carriers | 18 | 59.89 | 56.40 | 62.15 |
| Total | 23 | 60.21 | 57.47 | 62.76 |
| DENVER (UA-41.5%) | | | | |
| Single Carrier | 23 | 57.14 | 56.50 | 57.79 |
| Multi-Carriers | 54 | 61.62 | 59.80 | 63.19 |
| Total | 77 | 61.19 | 59.46 | 62.71 |
| CHICAGO (UA-43.1%) | | | | |
| Single Carrier | 36 | 64.86 | 73.46 | 46.42 |
| Multi-Carriers | 71 | 57.85 | 60.07 | 56.09 |
| Total | 107 | 58.71 | 62.44 | 55.38 |
| MIAMI (EA-43.1%) | | | | |
| Single Carrier | 12 | 53.96 | 56.43 | 49.21 |
| Multi-Carriers | 22 | 56.26 | 60.43 | 52.87 |
| Total | 34 | 56.06 | 59.94 | 52.67 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September, 1984)

| Dominant Carrier %/ Hub/Density | Number of Markets | Load Factor | | |
|------------------------------------|-------------------------|-------------|--------------|-------|
| | | Total | Carrier | |
| | | | Hub-Dominant | Other |
| <u>Less Than 50% Share:</u> | | | | |
| LONG BEACH (SI-40.3%) | | | | |
| Single Carrier | 3 | 48.02 | | 48.02 |
| Multi-Carriers | 2 | 69.19 | 73.63 | 60.44 |
| Total | 5 | 62.86 | 73.63 | 53.50 |
| SAN FRANCISCO (UA-37.1%) | | | | |
| Single Carrier | 16 | 59.14 | 56.49 | 61.37 |
| Multi-Carriers | 30 | 62.01 | 66.72 | 59.85 |
| Total | 46 | 61.67 | 65.03 | 60.00 |
| ORANGE COUNTY (DL-34.2%) | | | | |
| Single Carrier | 5 | 68.07 | 74.73 | 66.88 |
| Multi-Carriers | 4 | 63.97 | 75.41 | 58.65 |
| Total | 9 | 66.15 | 75.17 | 63.47 |
| SAN DIEGO (PS-27.4%) | | | | |
| Single Carrier | 10 | 57.02 | 59.29 | 56.30 |
| Multi-Carriers | 10 | 61.83 | 65.05 | 61.43 |
| Total | 20 | 60.86 | 63.02 | 60.52 |
| ORLANDO (EA-26.6%) | | | | |
| Single Carrier | 12 | 56.26 | 61.29 | 55.53 |
| Multi-Carriers | 23 | 58.13 | 59.48 | 57.59 |
| Total | 35 | 57.78 | 59.65 | 57.13 |
| SEATTLE (UA-26.5%) | | | | |
| Single Carrier | 9 | 55.95 | 61.28 | 55.20 |
| Multi-Carriers | 17 | 57.39 | 65.02 | 54.44 |
| Total | 26 | 57.24 | 64.83 | 54.54 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September, 1984)

| Dominant Carrier %/ Hub/Density | Number of Markets | Load Factor | | |
|------------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| <u>Less Than 50% Share:</u> | | | | |
| DETROIT (RC-26.4%) | | | | |
| Single Carrier | 12 | 61.78 | 61.67 | 61.83 |
| Multi-Carriers | 31 | 51.91 | 49.31 | 52.76 |
| Total | 43 | 52.96 | 51.13 | 53.59 |
| HONOLULU (HA-25.2%) | | | | |
| Single Carrier | 4 | 81.10 | 60.28 | 81.14 |
| Multi-Carriers | 8 | 72.49 | 62.61 | 72.79 |
| Total | 12 | 74.37 | 62.57 | 74.66 |
| OAKLAND (PS-24.9%) | | | | |
| Single Carrier | 8 | 61.31 | 59.74 | 61.41 |
| Multi-Carriers | 13 | 52.61 | 52.24 | 52.67 |
| Total | 21 | 57.00 | 54.47 | 57.29 |
| PHILADELPHIA (AL-24.5%) | | | | |
| Single Carrier | 15 | 51.57 | 53.64 | 50.71 |
| Multi-Carriers | 24 | 55.82 | 59.37 | 55.46 |
| Total | 39 | 55.13 | 57.20 | 54.84 |
| HOUSTON (WN-23.9%) | | | | |
| Single Carrier | 27 | 61.44 | 59.96 | 61.82 |
| Multi-Carriers | 34 | 56.30 | 58.17 | 56.15 |
| Total | 61 | 57.51 | 59.00 | 57.34 |
| TAMPA/ST. PETERSBURG (DL-23.5%) | | | | |
| Single Carrier | 13 | 56.20 | 38.61 | 58.50 |
| Multi-Carriers | 26 | 56.57 | 51.94 | 58.39 |
| Total | 39 | 56.50 | 50.76 | 58.41 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September, 1984)

| Dominant Carrier %/ Hub/Density | Number of Markets | Load Factor | | |
|------------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| <u>Less Than 50% Share:</u> | | | | |
| BOSTON (EA-22.7%) | | | | |
| Single Carrier | 12 | 54.34 | 70.26 | 54.33 |
| Multi-Carriers | 26 | 60.03 | 59.86 | 60.07 |
| Total | 38 | 59.24 | 59.87 | 59.13 |
| PHOENIX (RC-20.9%) | | | | |
| Single Carrier | 13 | 62.12 | 61.00 | 62.40 |
| Multi-Carriers | 25 | 58.01 | 57.23 | 58.18 |
| Total | 38 | 58.75 | 57.95 | 58.94 |
| WASHINGTON, D.C. (EA-20.6%) | | | | |
| Single Carrier | 29 | 51.60 | 52.96 | 51.57 |
| Multi-Carriers | 32 | 58.98 | 60.50 | 58.64 |
| Total | 61 | 57.79 | 60.33 | 57.33 |
| KANSAS CITY (TW-19.8%) | | | | |
| Single Carrier | 13 | 55.38 | 46.85 | 55.64 |
| Multi-Carriers | 27 | 52.87 | 53.14 | 52.78 |
| Total | 40 | 53.34 | 52.96 | 53.43 |
| LAS VEGAS (UA-16.6%) | | | | |
| Single Carrier | 9 | 64.50 | 72.98 | 62.31 |
| Multi-Carriers | 21 | 62.91 | 69.18 | 61.35 |
| Total | 30 | 63.14 | 69.73 | 61.48 |
| LOS ANGELES (WA-13.9%) | | | | |
| Single Carrier | 14 | 63.79 | 76.55 | 57.85 |
| Multi-Carriers | 34 | 61.92 | 64.75 | 60.98 |
| Total | 48 | 62.09 | 66.09 | 60.71 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September, 1984)

| <u>Dominant Carrier %/ Hub/Density</u> | <u>Number of Markets</u> | <u>Load Factor</u> | | |
|--|----------------------------------|--------------------|---------------------|--------------|
| | | <u>Total</u> | <u>Carrier</u> | |
| | | | <u>Hub-Dominant</u> | <u>Other</u> |
| <u>Less Than 50% Share:</u> | | | | |
| NEW YORK (EA-19.9%) | | | | |
| Single Carrier | 38 | 61.85 | 63.09 | 61.78 |
| Multi-Carriers | 88 | 58.65 | 60.62 | 58.29 |
| Total | 126 | 59.07 | 60.73 | 58.79 |
| Sub-Total: | | | | |
| Single Carrier | 373 | 61.21 | 63.83 | 60.28 |
| Multi-Carriers | 690 | 59.39 | 60.65 | 58.91 |
| Total | 1,063 | 59.65 | 61.08 | 59.11 |

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1984.

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT SHARE OF ENPLANEMENTS
(Year Ended September, 1979)

| Dominant Carriers %/ Hub/Density | Number of Markets | Load Factor | | |
|-------------------------------------|-------------------------|-------------|--------------|-------|
| | | Total | Carrier | |
| | | | Hub-Dominant | Other |
| <u>75% or More Share:</u> | | | | |
| BURBANK (RW-78.8%) | | | | |
| Single Carrier | 6 | 69.06 | 66.67 | 71.93 |
| Total | 6 | 69.06 | 66.67 | 71.93 |
| ORANGE COUNTY (RW-100.0%) | | | | |
| Single Carrier | 4 | 74.76 | 74.76 | |
| Total | 4 | 74.76 | 74.76 | |
| Sub-Total: | | | | |
| Single Carrier | 10 | 71.40 | 71.21 | 71.93 |
| Total | 10 | 71.40 | 71.21 | 71.93 |
| <u>60 to 74.99% Share:</u> | | | | |
| CHARLOTTE (EA-73.2%) | | | | |
| Single Carrier | 18 | 67.97 | 69.46 | 57.13 |
| Multi-Carriers | 5 | 62.20 | 67.00 | 57.27 |
| Total | 23 | 66.49 | 69.05 | 57.21 |
| Sub-Total: | | | | |
| Single Carrier | 18 | 67.97 | 69.46 | 57.13 |
| Multi-Carriers | 5 | 62.20 | 67.00 | 57.27 |
| Total | 23 | 66.49 | 69.05 | 57.21 |
| <u>50 to 59.99% Share:</u> | | | | |
| ATLANTA (DL-50.8%) | | | | |
| Single Carrier | 51 | 71.74 | 72.89 | 71.19 |
| Multi-Carriers | 50 | 64.11 | 64.97 | 63.02 |
| Total | 101 | 65.70 | 66.02 | 65.38 |
| Sub-Total: | | | | |
| Single Carrier | 51 | 71.74 | 72.89 | 71.19 |
| Multi-Carriers | 50 | 64.11 | 64.97 | 63.02 |
| Total | 101 | 65.70 | 66.02 | 65.38 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT SHARE OF ENPLANEMENTS
(Year Ended September, 1979)

| Dominant Carriers %/ Hub/Density | Number of Markets | Load Factor | | |
|-------------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| <u>Less Than 50% Share:</u> | | | | |
| PITTSBURGH (AL-49.9%) | | | | |
| Single Carrier | 24 | 68.34 | 67.19 | 69.29 |
| Multi-Carriers | 31 | 64.30 | 66.50 | 63.28 |
| Total | 55 | 65.17 | 66.70 | 64.37 |
| OAKLAND (UA-48.2%) | | | | |
| Single Carrier | 6 | 60.22 | 62.65 | 52.32 |
| Multi-Carriers | 6 | 53.15 | 57.31 | 51.74 |
| Total | 12 | 56.99 | 61.49 | 51.90 |
| ORLANDO (EA-46.2%) | | | | |
| Single Carrier | 5 | 62.33 | 71.64 | 61.02 |
| Multi-Carriers | 23 | 62.01 | 66.11 | 57.44 |
| Total | 28 | 62.04 | 66.23 | 57.99 |
| FT. LAUDERDALE (DL-45.3%) | | | | |
| Single Carrier | 4 | 54.58 | 66.73 | 51.86 |
| Multi-Carriers | 18 | 62.18 | 66.70 | 58.65 |
| Total | 22 | 61.70 | 66.70 | 58.04 |
| HONOLULU (UA-43.4%) | | | | |
| Single Carrier | 5 | 75.33 | 76.97 | 72.41 |
| Multi-Carriers | 6 | 75.83 | 80.83 | 73.28 |
| Total | 11 | 75.72 | 79.47 | 73.16 |
| ST. LOUIS (TW-42.6%) | | | | |
| Single Carrier | 28 | 65.97 | 67.11 | 64.66 |
| Multi-Carriers | 31 | 63.81 | 65.23 | 62.43 |
| Total | 59 | 64.47 | 65.84 | 63.07 |
| MEMPHIS (DL-42.1%) | | | | |
| Single Carrier | 14 | 63.74 | 68.62 | 51.94 |
| Multi-Carriers | 24 | 58.33 | 63.43 | 57.21 |
| Total | 38 | 59.83 | 66.55 | 56.58 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT SHARE OF ENPLANEMENTS
(Year Ended September, 1979)

| Dominant Carriers %/ Hub/Density | Number of Markets | Load Factor | | |
|-------------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| <u>Less Than 50% Share:</u> | | | | |
| MIAMI (EA-42.1%) | | | | |
| Single Carrier | 12 | 67.94 | 74.22 | 60.92 |
| Multi-Carriers | 26 | 60.11 | 67.65 | 56.06 |
| Total | 38 | 60.47 | 68.08 | 56.22 |
| SALT LAKE CITY (WA-41.5%) | | | | |
| Single Carrier | 20 | 63.86 | 62.77 | 65.17 |
| Multi-Carriers | 13 | 62.44 | 64.03 | 61.85 |
| Total | 33 | 62.85 | 63.46 | 62.52 |
| MINNEAPOLIS-ST. PAUL (NW-39.4%) | | | | |
| Single Carrier | 15 | 62.79 | 65.00 | 60.82 |
| Multi-Carriers | 29 | 55.52 | 52.51 | 58.21 |
| Total | 44 | 57.42 | 55.77 | 58.90 |
| SAN FRANCISCO (UA-37.9%) | | | | |
| Single Carrier | 19 | 69.13 | 69.89 | 67.57 |
| Multi-Carriers | 35 | 64.17 | 66.41 | 63.18 |
| Total | 54 | 64.38 | 66.72 | 63.27 |
| DALLAS (BN-35.5%) | | | | |
| Single Carrier | 30 | 68.75 | 66.53 | 70.65 |
| Multi-Carriers | 38 | 62.51 | 59.41 | 63.97 |
| Total | 68 | 63.73 | 61.26 | 65.05 |
| KANSAS CITY (TW-33.0%) | | | | |
| Single Carrier | 18 | 58.53 | 65.21 | 55.37 |
| Multi-Carriers | 21 | 58.06 | 58.96 | 57.54 |
| Total | 39 | 58.15 | 60.10 | 57.08 |
| TAMPA/ST. PETERSBURG (DL-32.7%) | | | | |
| Single Carrier | 10 | 65.85 | 74.56 | 64.20 |
| Multi-Carriers | 29 | 65.10 | 68.79 | 63.37 |
| Total | 39 | 65.21 | 69.23 | 63.51 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT SHARE OF ENPLANEMENTS
(Year Ended September, 1979)

| Dominant Carriers %/ Hub/Density | Number of Markets | Load Factor | | |
|-------------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| <u>Less Than 50% Share:</u> | | | | |
| SAN DIEGO (AA-30.8%) | | | | |
| Single Carrier | 6 | 66.03 | 69.86 | 62.21 |
| Multi-Carriers | 11 | 62.86 | 66.25 | 61.14 |
| Total | 17 | 63.37 | 67.05 | 61.27 |
| CHICAGO (UA-28.3%) | | | | |
| Single Carrier | 50 | 70.06 | 73.49 | 65.08 |
| Multi-Carriers | 68 | 63.56 | 63.92 | 63.41 |
| Total | 113 | 64.47 | 66.25 | 63.55 |
| SEATTLE (UA-28.2%) | | | | |
| Single Carrier | 7 | 68.67 | 13.74 | 68.68 |
| Multi-Carriers | 22 | 60.81 | 65.22 | 59.12 |
| Total | 29 | 61.19 | 65.22 | 59.75 |
| NEW YORK (EA-27.8%) | | | | |
| Single Carrier | 49 | 66.58 | 69.77 | 65.62 |
| Multi-Carriers | 77 | 62.88 | 64.79 | 62.44 |
| Total | 126 | 63.30 | 65.47 | 62.78 |
| DENVER (UA-26.9%) | | | | |
| Single Carrier | 28 | 65.45 | 67.48 | 62.70 |
| Multi-Carriers | 45 | 63.20 | 64.85 | 62.46 |
| Total | 73 | 63.45 | 65.35 | 62.48 |
| PHOENIX (AA-26.3%) | | | | |
| Single Carrier | 13 | 64.19 | 68.08 | 63.14 |
| Multi-Carriers | 21 | 65.79 | 70.97 | 62.47 |
| Total | 34 | 65.54 | 70.71 | 62.60 |
| LAS VEGAS (WA-25.7%) | | | | |
| Single Carrier | 19 | 69.29 | 67.55 | 70.28 |
| Multi-Carriers | 15 | 67.32 | 67.25 | 67.32 |
| Total | 34 | 67.91 | 67.49 | 67.98 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT SHARE OF ENPLANEMENTS
(Year Ended September, 1979)

| Dominant Carriers %/ Hub/Density | Number of Markets | Load Factor | | |
|-------------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| <u>Less Than 50% Share:</u> | | | | |
| WASHINGTON, D.C. (EA-25.7%) | | | | |
| Single Carrier | 32 | 63.07 | 70.98 | 61.91 |
| Multi-Carriers | 44 | 63.09 | 71.33 | 61.43 |
| Total | 76 | 63.09 | 71.28 | 61.52 |
| BOSTON (EA-25.2%) | | | | |
| Single Carrier | 18 | 59.92 | 66.29 | 56.36 |
| Multi-Carriers | 26 | 63.91 | 67.25 | 63.37 |
| Total | 44 | 63.52 | 67.04 | 62.85 |
| LOS ANGELES (UA-24.5%) | | | | |
| Single Carrier | 19 | 64.82 | 65.39 | 64.49 |
| Multi-Carriers | 37 | 64.93 | 65.91 | 64.62 |
| Total | 56 | 64.92 | 65.87 | 64.61 |
| PHILADELPHIA (AL-23.4%) | | | | |
| Single Carrier | 18 | 65.01 | 65.79 | 64.79 |
| Multi-Carriers | 27 | 60.32 | 73.77 | 59.28 |
| Total | 45 | 61.23 | 70.42 | 60.22 |
| DETROIT (AA-20.8%) | | | | |
| Single Carrier | 11 | 62.05 | 69.67 | 53.46 |
| Multi-Carriers | 38 | 60.04 | 66.42 | 58.40 |
| Total | 49 | 60.26 | 67.21 | 58.06 |
| Sub-Total: | | | | |
| Single Carrier | 503 | 66.35 | 69.33 | 64.22 |
| Multi-Carriers | 784 | 63.32 | 65.51 | 62.49 |
| Total | 1,287 | 63.73 | 66.24 | 62.68 |

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1979.

Domestic Large Hubs
Selected Load Factor Differentials
Based on Dominant Carrier Share
(Year Ended September, 1988)

| | Hub Dominant Carrier--Monopoly vs. Competitive LF | Hub Dominant Total vs. Other Total | Hub Dominant Competitive vs. Other Competitive |
|-----------------------------|---|--|---|
| <u>75% or More Share:</u> | | | |
| Charlotte (PI-91.6%) | 5.87 pts. | 11.57 pts. | 4.06 pts. |
| Pittsburgh (AL-85.4%) | 7.49 | 20.41 | 13.86 |
| Memphis (NW-83.6%) | 7.71 | 10.00 | 3.74 |
| St. Louis (TW-82.8%) | 4.94 | 6.90 | 2.96 |
| Salt Lake City (DL-79.3%) | 1.55 | 3.41 | 1.83 |
| Minneapolis (NW-77.6%) | 7.34 | 6.40 | (0.37) |
| Sub Total | 5.42 | 9.27 | 4.44 |
| <u>60 to 74.9% Share:</u> | | | |
| -0- | | | |
| <u>50 to 59.99% Share:</u> | | | |
| Detroit (NW-57.7%) | (1.09) | 2.12 | 2.16 |
| Atlanta (DL-57.1%) | 0.24 | 0.10 | 0.25 |
| Dallas (AA-54.9%) | (1.32) | 8.87 | 8.93 |
| Houston (CO-50.5%) | 2.36 | 1.71 | 0.88 |
| Sub Total | (1.90) | 4.04 | 4.40 |
| <u>Less Than 50% Share:</u> | | | |
| Chicago (UA-46.2%) | 0.16 | 9.42 | 9.20 |
| Phoenix (HP-44.4%) | 0.03 | (8.81) | (8.28) |
| Orange County (AA-41.9%) | 14.48 | 10.16 | 8.06 |
| Denver (UA-43.3%) | (8.76) | 9.66 | 9.69 |
| Miami (EA-40.6%) | (21.56) | 3.65 | 4.13 |
| Philadelphia (AL-38.7%) | 5.28 | 1.39 | (0.17) |
| Ft. Lauderdale (DL-35.3%) | 4.28 | (2.82) | (2.10) |
| San Francisco (UA-34.8%) | (8.34) | 5.55 | 6.93 |
| Honolulu (HA-34.2%) | (0.62) | (0.10) | (0.17) |
| Las Vegas (HP-33.6%) | 1.76 | (12.11) | (13.32) |
| Kansas City (EA-31.0%) | (6.46) | 5.75 | 6.12 |
| Long Beach (AS-30.5%) | 3.11 | (10.53) | (11.85) |
| Seattle (UA-25.6%) | (6.94) | 8.39 | 9.46 |
| Orlando (DL-24.9%) | 6.37 | (7.24) | (6.77) |
| Burbank (PS-23.8%) | 0 | 5.70 | 8.79 |
| Washington (UA-21.7%) | (19.05) | 4.67 | 5.80 |
| Tampa (EA-20.7%) | (2.15) | (0.79) | (0.98) |
| Oakland (AA-20.1%) | 7.90 | (3.79) | (5.77) |
| Boston (EA-18.8%) | 0.36 | (0.61) | (0.39) |
| New York (CO-18.6%) | 1.49 | (3.56) | (4.43) |
| Los Angeles (UA-18.0%) | (8.92) | 2.22 | 3.06 |
| San Diego (AA-13.9%) | 29.15 | 7.00 | 6.97 |
| Sub Total | (4.29) | 2.56 | 3.21 |

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1988.

Table II-28
Page 1 of 1

City-Pair Concentration
at Domestic Large Hubs
Grouped by the Hub Dominant Carrier's Share of Enplanements
Years Ended September 1988, 1984, and 1979

| Hub-Dominant Carrier Share and Number of Competitors | Number of Markets | | | Percent Distribution | | |
|---|-------------------|--------------|--------------|----------------------|------------|------------|
| | 1988 | 1984 | 1979 | 1988 | 1984 | 1979 |
| 75% or More Share: | | | | | | |
| Single Carrier | 307 | 46 | 10 | 17 | 3 | <u>1/</u> |
| Two Carriers | 56 | 13 | | 3 | 1 | |
| Three Carriers | 19 | 1 | | 1 | <u>1/</u> | |
| Four or More Carriers | 0 | 0 | | 0 | 0 | |
| Multi-Carrier Total | <u>75</u> | <u>14</u> | <u>0</u> | <u>4</u> | <u>1</u> | |
| Total | <u>382</u> | <u>60</u> | <u>10</u> | <u>21</u> | <u>4</u> | <u>1/</u> |
| 60 to 74.9% Share: | | | | | | |
| Single Carrier | | 56 | 18 | | 4 | 1 |
| Two Carriers | | 22 | 5 | | 1 | <u>1/</u> |
| Three Carriers | | 5 | 0 | | <u>1/</u> | |
| Four or More Carriers | | 1 | 0 | | <u>1/</u> | |
| Multi-Carrier Total | | <u>28</u> | <u>5</u> | | <u>2</u> | <u>1/</u> |
| Total | 0 | <u>84</u> | <u>23</u> | 0 | <u>6</u> | <u>2</u> |
| 50 to 59.9 % Share: | | | | | | |
| Single Carrier | 178 | 111 | 51 | 10 | 8 | 4 |
| Two Carriers | 118 | 117 | 45 | 7 | 8 | 3 |
| Three Carriers | 34 | 34 | 5 | 2 | 2 | <u>1/</u> |
| Four or More Carriers | 2 | 5 | 0 | <u>1/</u> | <u>1/</u> | |
| Multi-Carrier Total | <u>154</u> | <u>156</u> | <u>50</u> | <u>9</u> | <u>10</u> | <u>4</u> |
| Total | <u>332</u> | <u>267</u> | <u>101</u> | <u>19</u> | <u>18</u> | <u>7</u> |
| Less Than 40% Share: | | | | | | |
| Single Carrier | 455 | 373 | 503 | 26 | 25 | 35 |
| Two Carriers | 399 | 465 | 615 | 23 | 32 | 43 |
| Three Carriers | 145 | 162 | 140 | 8 | 11 | 10 |
| Four or More Carriers | 50 | 63 | 29 | 3 | 4 | 2 |
| Multi-Carrier Total | <u>594</u> | <u>690</u> | <u>784</u> | <u>34</u> | <u>47</u> | <u>55</u> |
| Total | <u>1,049</u> | <u>1,063</u> | <u>1,287</u> | <u>60</u> | <u>72</u> | <u>91</u> |
| Total City-Pair Markets | <u>1,763</u> | <u>1,475</u> | <u>1,421</u> | <u>100</u> | <u>100</u> | <u>100</u> |

1/ Less than 0.5 percent.

SOURCE: ER-586 Service Segment and T-9 Data for Years Ended September 1988, 1984, and 1979.

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER'S SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1988)

| Dominant Carriers %/ Density | Number of Markets | Load Factor | | |
|---------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| <u>75% or More Share:</u> | | | | |
| 50 - 100 (Enpl's per day) | | | | |
| Single Carrier | 55 | 54.65 | 54.70 | 46.58 |
| Total | 55 | 54.65 | 54.70 | 46.58 |
| 101 - 200 | | | | |
| Single Carrier | 100 | 56.78 | 56.70 | 59.43 |
| Two Carriers | 2 | 35.86 | 39.33 | 32.96 |
| Multi-Carriers | 2 | 35.86 | 39.33 | 32.96 |
| Total | 102 | 56.49 | 56.59 | 53.78 |
| 201 - 500 | | | | |
| Single Carrier | 116 | 64.57 | 64.92 | 43.96 |
| Two Carriers | 34 | 53.55 | 56.22 | 49.56 |
| Three Carriers | 4 | 54.36 | 55.36 | 53.67 |
| Multi-Carriers | 38 | 53.68 | 56.11 | 50.50 |
| Total | 154 | 61.56 | 63.33 | 49.90 |
| 501 or More | | | | |
| Single Carrier | 36 | 65.98 | 66.32 | 31.22 |
| Two Carriers | 20 | 58.19 | 60.94 | 54.59 |
| Three Carriers | 15 | 55.24 | 55.90 | 54.80 |
| Multi-Carriers | 35 | 56.71 | 58.85 | 54.71 |
| Total | 71 | 61.61 | 64.06 | 54.23 |
| Total | | | | |
| Single Carrier | 307 | 62.83 | 63.08 | 47.07 |
| Two Carriers | 56 | 55.74 | 58.43 | 51.99 |
| Three Carriers | 19 | 55.10 | 55.81 | 54.62 |
| Multi-Carriers | 75 | 55.49 | 57.66 | 53.22 |
| Total | 382 | 60.57 | 62.06 | 52.79 |
| Hubs : CLT MEM MSP PIT STL SLC | | | | |

60 to 74.9% Share:

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER'S SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1988)

| Dominant Carrier %/ Density | Number of Markets | Load Factor | | |
|------------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| 50 to 59.99% Share: | | | | |
| 50 - 100 (Enpl's per day) | | | | |
| Single Carrier | 24 | 56.62 | 55.41 | 60.89 |
| Two Carriers | 1 | 49.20 | 47.29 | 49.59 |
| Multi-Carriers | 1 | 49.20 | 47.29 | 49.59 |
| Total | 25 | 56.25 | 55.32 | 59.00 |
| 101 - 200 | | | | |
| Single Carrier | 70 | 58.05 | 58.66 | 56.46 |
| Two Carriers | 4 | 50.94 | 50.11 | 51.53 |
| Multi-Carriers | 4 | 50.94 | 50.11 | 51.53 |
| Total | 74 | 57.52 | 58.28 | 55.77 |
| 201 - 500 | | | | |
| Single Carrier | 64 | 59.08 | 60.39 | 55.64 |
| Two Carriers | 32 | 57.68 | 59.39 | 55.76 |
| Three Carriers | 7 | 60.50 | 59.46 | 61.35 |
| Multi-Carriers | 39 | 58.06 | 59.40 | 56.64 |
| Total | 103 | 58.59 | 60.00 | 56.26 |
| 501 or More | | | | |
| Single Carrier | 20 | 63.20 | 64.55 | 58.24 |
| Two Carriers | 81 | 62.00 | 64.00 | 59.48 |
| Three Carriers | 27 | 59.54 | 62.06 | 57.39 |
| Four Carriers | 2 | 58.87 | 59.23 | 58.61 |
| Multi-Carriers | 110 | 61.24 | 63.43 | 58.81 |
| Total | 130 | 61.45 | 63.59 | 58.78 |
| Total | | | | |
| Single Carrier | 178 | 59.85 | 60.94 | 56.71 |
| Two Carriers | 118 | 61.20 | 63.20 | 58.75 |
| Three Carriers | 34 | 59.61 | 61.90 | 57.67 |
| Four Carriers | 2 | 58.87 | 59.23 | 58.61 |
| Multi-Carriers | 154 | 60.74 | 62.84 | 58.44 |
| Total | 332 | 60.51 | 62.20 | 58.16 |
| Hubs : ATL DFW DAL DTW DET IAH HOU | | | | |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER'S SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1988)

| Dominant Carrier %/ Density | Number of Markets | Load Factor | | |
|--------------------------------|---|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| Less Than 50% Share: | | | | |
| 50-100 (Enpl's per day) | | | | |
| Single Carrier | 112 | 58.65 | 58.61 | 58.66 |
| Two Carriers | 17 | 48.58 | 51.77 | 45.18 |
| Three Carriers | 3 | 40.34 | 39.18 | 40.62 |
| Multi-Carriers | 20 | 47.71 | 51.23 | 44.42 |
| Total | 132 | 57.25 | 57.27 | 57.23 |
| 101 - 200 | | | | |
| Single Carrier | 145 | 60.94 | 61.86 | 60.58 |
| Two Carriers | 61 | 59.60 | 62.17 | 58.31 |
| Three Carriers | 7 | 46.01 | 47.04 | 45.74 |
| Four or More | 1 | 41.43 | 44.31 | 40.55 |
| Multi-Carriers | 69 | 58.84 | 61.63 | 57.50 |
| Total | 214 | 60.30 | 61.78 | 59.69 |
| 201 - 500 | | | | |
| Single Carrier | 161 | 63.27 | 62.09 | 63.58 |
| Two Carriers | 152 | 60.45 | 61.19 | 60.09 |
| Three Carriers | 49 | 58.01 | 55.31 | 58.84 |
| Four or More | 6 | 55.35 | 32.14 | 57.24 |
| Multi-Carriers | 207 | 59.84 | 60.10 | 59.72 |
| Total | 368 | 61.19 | 60.72 | 61.37 |
| 501 or More | | | | |
| Single Carrier | 37 | 64.54 | 60.49 | 64.88 |
| Two Carriers | 169 | 64.83 | 67.85 | 62.83 |
| Three Carriers | 86 | 62.91 | 64.72 | 62.22 |
| Four or More | 43 | 64.88 | 66.17 | 64.61 |
| Multi-Carriers | 298 | 64.36 | 66.93 | 63.18 |
| Total | 335 | 64.37 | 66.83 | 63.31 |
| Total | | | | |
| Single Carrier | 455 | 62.58 | 61.38 | 62.89 |
| Two Carriers | 399 | 63.60 | 66.29 | 61.93 |
| Three Carriers | 145 | 62.11 | 63.50 | 61.60 |
| Four or More | 50 | 64.73 | 65.94 | 64.48 |
| Multi-Carriers | 594 | 63.46 | 65.67 | 62.46 |
| Total | 1,049 | 63.30 | 65.11 | 62.55 |
| Hubs | : BOS BUR MDW ORD DEN FLL HNL MCI LAS LGB LAX MIA | | | |
| | : LGA JFK EWR OOR OAK MCO PHL PHX SAN SFO SNA SEA | | | |
| | : TPA PIE IAD DCA | | | |

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1988.

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER'S SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1984)

| Dominant Carriers %/ Density | Number of Markets | Load Factor | | |
|---------------------------------|-------------------------|-------------|--------------|-------|
| | | Total | Carrier | |
| | | | Hub-Dominant | Other |
| 75% or More Share: | | | | |
| 50 - 100 (Enpl's per day) | | | | |
| Single Carrier | 7 | 52.53 | 48.80 | 60.92 |
| Total | 7 | 52.53 | 48.80 | 60.92 |
| 101 - 200 | | | | |
| Single Carrier | 15 | 53.98 | 53.98 | 60.88 |
| Two Carriers | 2 | 47.33 | 50.72 | 31.72 |
| Multi-Carriers | 2 | 47.33 | 50.72 | 31.72 |
| Total | 17 | 52.70 | 53.44 | 32.23 |
| 201 - 500 | | | | |
| Single Carrier | 22 | 62.86 | 63.71 | 41.45 |
| Two Carriers | 8 | 63.42 | 68.18 | 55.74 |
| Three Carriers | 1 | 61.23 | 72.45 | 56.57 |
| Multi-Carriers | 9 | 63.33 | 68.27 | 55.80 |
| Total | 31 | 63.09 | 65.44 | 54.49 |
| 501 or More | | | | |
| Single Carrier | 2 | 58.59 | 61.82 | 28.98 |
| Two Carriers | 3 | 61.16 | 64.49 | 59.38 |
| Multi-Carriers | 3 | 61.16 | 64.49 | 59.38 |
| Total | 5 | 60.52 | 63.26 | 57.93 |
| Total | | | | |
| Single Carrier | 46 | 59.90 | 60.67 | 46.52 |
| Two Carriers | 13 | 61.84 | 66.01 | 56.93 |
| Three Carriers | 1 | 61.23 | 72.45 | 56.57 |
| Multi-Carriers | 14 | 61.82 | 66.10 | 56.91 |
| Total | 60 | 60.84 | 62.59 | 55.79 |
| Hub | : PTT | | | |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER'S SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1984)

| Dominant Carriers %/ Density | Number of Markets | Load Factor | | |
|---------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| 60 to 74.99% Share: | | | | |
| 50 - 100 (Enpl's per day) | | | | |
| Single Carrier | 14 | 53.43 | 53.83 | 49.99 |
| Total | 13 | 53.43 | 53.83 | 49.99 |
| 101 - 200 | | | | |
| Single Carrier | 23 | 53.69 | 54.26 | 49.39 |
| Two Carriers | 3 | 54.00 | 60.98 | 42.67 |
| Multi-Carriers | 3 | 54.00 | 60.98 | 42.67 |
| Total | 26 | 53.72 | 54.62 | 48.01 |
| 201 - 500 | | | | |
| Single Carrier | 18 | 60.47 | 61.13 | 33.17 |
| Two Carriers | 16 | 52.84 | 55.07 | 49.35 |
| Three Carriers | 2 | 50.85 | 54.84 | 48.27 |
| Multi-Carriers | 18 | 52.49 | 55.05 | 49.08 |
| Total | 36 | 55.78 | 58.36 | 48.49 |
| 501 or More | | | | |
| Single Carrier | 1 | 55.44 | 55.44 | 54.55 |
| Two Carriers | 3 | 58.85 | 58.12 | 59.98 |
| Three Carriers | 3 | 57.28 | 67.49 | 52.17 |
| Four Carriers | 1 | 52.21 | 45.64 | 53.91 |
| Multi-Carriers | 7 | 56.76 | 60.88 | 54.11 |
| Total | 8 | 56.61 | 59.54 | 54.11 |
| Total | | | | |
| Single Carrier | 56 | 56.47 | 57.16 | 47.38 |
| Two Carriers | 22 | 54.32 | 56.09 | 52.56 |
| Three Carriers | 5 | 55.52 | 63.60 | 51.17 |
| Four Carriers | 1 | 52.21 | 45.64 | 53.91 |
| Multi-Carriers | 28 | 54.52 | 57.43 | 51.73 |
| Total | 84 | 55.44 | 57.26 | 51.25 |
| Hubs : CLT SLC | | | | |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER'S SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1984)

| Dominant Carriers %/ Density | Number of Markets | Load Factor | | |
|---------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| <u>50 to 59.99% Share:</u> | | | | |
| 50 - 100 (Enpl's per day) | | | | |
| Single Carrier | 30 | 50.95 | 51.64 | 49.77 |
| Two Carriers | 2 | 36.86 | 32.74 | 39.98 |
| Multi-Carriers | 2 | 36.86 | 32.74 | 39.98 |
| Total | 32 | 48.06 | 48.81 | 47.00 |
| 101 - 200 | | | | |
| Single Carrier | 34 | 57.48 | 57.72 | 57.15 |
| Two Carriers | 9 | 47.89 | 50.25 | 45.50 |
| Multi-Carriers | 9 | 47.89 | 50.25 | 45.50 |
| Total | 43 | 54.36 | 55.51 | 52.95 |
| 201 - 500 | | | | |
| Single Carrier | 39 | 60.07 | 59.64 | 60.15 |
| Two Carriers | 47 | 56.41 | 59.68 | 52.53 |
| Three Carriers | 8 | 49.70 | 49.58 | 49.77 |
| Multi-Carriers | 55 | 55.24 | 58.34 | 51.92 |
| Total | 94 | 56.76 | 58.87 | 53.66 |
| 501 or More | | | | |
| Single Carrier | 8 | 63.86 | 64.67 | 60.15 |
| Two Carriers | 59 | 55.85 | 57.72 | 53.75 |
| Three Carriers | 26 | 54.64 | 59.96 | 50.30 |
| Four Carriers | 5 | 52.81 | 59.96 | 47.16 |
| Multi-Carriers | 90 | 55.16 | 58.64 | 51.78 |
| Total | 98 | 55.86 | 59.42 | 52.04 |
| Total | | | | |
| Single Carrier | 111 | 59.67 | 60.24 | 58.16 |
| Two Carriers | 117 | 55.49 | 57.77 | 52.91 |
| Three Carriers | 34 | 54.10 | 58.96 | 50.24 |
| Four Carriers | 5 | 52.10 | 59.96 | 47.16 |
| Multi-Carriers | 156 | 54.88 | 58.23 | 51.57 |
| Total | 267 | 55.79 | 58.74 | 52.32 |
| Hubs : ALT BUR DFW DAL STL | | | | |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER'S SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1984)

| Dominant Carriers %/ Density | Number of Markets | Load Factor | | |
|---------------------------------|---|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| <u>Less Than 50% Share:</u> | | | | |
| 50 - 100 (Enpl's per day) | | | | |
| Single Carrier | 123 | 52.42 | 55.52 | 51.22 |
| Two Carriers | 26 | 49.74 | 45.49 | 51.54 |
| Three Carriers | 6 | 31.80 | 3.36 | 32.88 |
| Multi-Carriers | 32 | 48.89 | 45.23 | 50.35 |
| Total | 155 | 51.65 | 53.24 | 51.03 |
| 101 - 200 | | | | |
| Single Carrier | 149 | 57.28 | 60.52 | 55.70 |
| Two Carriers | 105 | 52.25 | 53.09 | 51.88 |
| Three Carriers | 16 | 52.93 | 53.74 | 52.54 |
| Four or More | 3 | 32.17 | 16.51 | 36.77 |
| Multi-Carriers | 124 | 52.23 | 53.03 | 51.88 |
| Total | 273 | 54.84 | 57.04 | 53.83 |
| 201 - 500 | | | | |
| Single Carrier | 78 | 61.05 | 63.85 | 60.12 |
| Two Carriers | 188 | 58.44 | 59.28 | 58.08 |
| Three Carriers | 44 | 55.05 | 54.94 | 55.08 |
| Four or More | 12 | 52.78 | 53.93 | 52.57 |
| Multi-Carriers | 244 | 57.61 | 58.57 | 57.25 |
| Total | 322 | 58.29 | 59.53 | 57.83 |
| 501 or More | | | | |
| Single Carrier | 23 | 70.72 | 77.92 | 69.16 |
| Two Carriers | 146 | 59.89 | 61.89 | 58.88 |
| Three Carriers | 96 | 61.83 | 62.48 | 61.61 |
| Four Carriers | 48 | 59.53 | 61.08 | 59.18 |
| Multi-Carriers | 290 | 60.46 | 61.95 | 59.90 |
| Total | 313 | 61.00 | 62.51 | 60.45 |
| Total | | | | |
| Single Carrier | 373 | 61.21 | 63.83 | 60.28 |
| Two Carriers | 465 | 58.70 | 60.29 | 57.95 |
| Three Carriers | 162 | 60.73 | 61.43 | 60.49 |
| Four Carriers | 63 | 59.21 | 60.65 | 58.91 |
| Multi-Carriers | 690 | 59.39 | 60.65 | 58.91 |
| Total | 1,063 | 59.65 | 61.08 | 59.11 |
| Hubs | : BOS ORD MDW DEN DTW FLL HNL HOU IAH MCI LAS LGB | | | |
| | : LAX MEM MIA MSP EWR JFK LGA OAK MCO PHL PHX SAN | | | |
| | : SFO SNA SEA TPA PIE IAD DCA | | | |

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1984.

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1979)

| Dominant Carriers %/ Density | Number of Markets | Load Factor | | |
|---------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| 75% or More Share: | | | | |
| 50 - 100 (Enpl's per day) | | | | |
| Single Carrier | 2 | 71.36 | 78.85 | 61.01 |
| Total | 2 | 71.36 | 78.85 | 61.01 |
| 101 - 200 | | | | |
| Single Carrier | 4 | 69.24 | 70.39 | 45.02 |
| Total | 4 | 69.24 | 70.39 | 45.02 |
| 201 - 500 | | | | |
| Single Carrier | 4 | 72.70 | 71.20 | 75.08 |
| Total | 4 | 72.70 | 71.20 | 75.08 |
| Total | | | | |
| Single Carrier | 10 | 71.40 | 71.21 | 71.93 |
| Total | 10 | 71.40 | 71.21 | 71.93 |
| Hubs: | BUR SNA | | | |
| 60 to 74.99% Share: | | | | |
| 101 - 200 | | | | |
| Single Carrier | 7 | 66.23 | 69.07 | 56.28 |
| Two Carriers | 2 | 61.78 | 72.70 | 48.08 |
| Multi-Carriers | 2 | 61.78 | 72.70 | 48.08 |
| Total | 9 | 64.82 | 69.97 | 52.35 |
| 201 - 500 | | | | |
| Single Carrier | 2 | 61.56 | 57.61 | 61.57 |
| Two Carriers | 1 | 52.11 | 50.21 | 61.28 |
| Multi-Carriers | 1 | 52.11 | 50.21 | 61.28 |
| Total | 3 | 58.97 | 50.24 | 61.55 |
| 201 - 500 | | | | |
| Single Carrier | 9 | 68.99 | 69.53 | 26.06 |
| Two Carriers | 1 | 50.76 | 61.70 | 41.90 |
| Multi-Carriers | 1 | 50.76 | 61.70 | 41.90 |
| Total | 10 | 68.50 | 69.43 | 34.77 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1979)

| Dominant Carriers %/ Density | Number of Markets | Load Factor | | |
|---------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| 501 or More | | | | |
| Two Carries | 1 | 64.73 | 68.83 | 61.32 |
| Multi-Carriers | 1 | 64.73 | 68.83 | 61.32 |
| Total | 1 | 64.73 | 68.83 | 61.32 |
| Total | | | | |
| Single Carrier | 18 | 67.97 | 69.46 | 57.13 |
| Two Carriers | 5 | 62.20 | 67.00 | 57.27 |
| Multi-Carriers | 5 | 62.20 | 67.00 | 57.27 |
| Total | 23 | 66.49 | 69.05 | 57.21 |
| Hubs: | CLT | | | |
| 50 to 59.99 % Share: | | | | |
| 50 - 100 (Enpl's per day) | | | | |
| Single Carrier | 10 | 64.54 | 67.14 | 64.24 |
| Two Carriers | 2 | 62.15 | 43.72 | 66.19 |
| Three Carriers | 1 | 70.06 | 76.17 | 66.14 |
| Multi-Carriers | 3 | 63.87 | 55.91 | 66.18 |
| Total | 13 | 64.38 | 62.49 | 64.67 |
| 101 - 200 | | | | |
| Single Carrier | 12 | 68.10 | 69.61 | 67.54 |
| Two Carriers | 3 | 61.04 | 69.61 | 61.04 |
| Three Carriers | 1 | 65.04 | 66.15 | 63.91 |
| Multi-Carriers | 4 | 62.67 | 66.15 | 61.77 |
| Total | 16 | 67.34 | 69.22 | 66.68 |
| 201 - 500 | | | | |
| Single Carrier | 17 | 72.08 | 71.97 | 72.15 |
| Two Carriers | 7 | 65.21 | 63.87 | 65.57 |
| Multi Carriers | 7 | 65.21 | 63.87 | 65.57 |
| Total | 24 | 69.36 | 69.84 | 69.14 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1979)

| Dominant Carriers %/ Density | Number of Markets | Load Factor | | |
|---------------------------------|-------------------------|-------------|-------------------------|-------|
| | | Total | Carrier Hub-Dominant | Other |
| 501 or More | | | | |
| Single Carrier | 12 | 74.03 | 75.08 | 73.52 |
| Two Carriers | 33 | 64.48 | 65.23 | 63.38 |
| Three Carriers | 3 | 58.04 | 60.90 | 55.58 |
| Multi-Carriers | 36 | 64.06 | 65.01 | 62.73 |
| Total | 48 | 65.16 | 65.67 | 64.52 |
| Total | | | | |
| Single Carrier | 51 | 71.74 | 72.89 | 71.19 |
| Two Carriers | 45 | 64.49 | 65.17 | 63.60 |
| Three Carriers | 5 | 58.60 | 61.41 | 56.18 |
| Multi-Carriers | 50 | 64.11 | 64.97 | 63.02 |
| Total | 101 | 65.70 | 66.02 | 65.38 |
| Hubs: | ATL | | | |
| Less than 50% Share: | | | | |
| 50 - 100 (Enpl's per day) | | | | |
| Single Carrier | 214 | 61.12 | 65.60 | 59.41 |
| Two Carriers | 68 | 53.72 | 55.27 | 53.29 |
| Three Carriers | 9 | 40.65 | 40.24 | 40.66 |
| Four or More | 2 | 19.11 | 16.15 | 20.33 |
| Multi-Carriers | 79 | 51.98 | 55.08 | 51.24 |
| Total | 293 | 58.31 | 63.12 | 56.70 |
| 101 - 200 | | | | |
| Single Carrier | 163 | 64.23 | 66.15 | 62.78 |
| Two Carriers | 130 | 59.18 | 64.13 | 57.61 |
| Three Carriers | 17 | 47.71 | 38.99 | 49.16 |
| Four or More | 2 | 36.46 | 33.35 | 36.95 |
| Multi-Carriers | 149 | 58.26 | 62.96 | 56.83 |
| Total | 312 | 60.78 | 64.80 | 58.92 |
| 201 - 500 | | | | |
| Single Carrier | 111 | 67.28 | 67.47 | 67.17 |
| Two Carriers | 252 | 62.45 | 64.71 | 61.56 |
| Three Carriers | 30 | 56.16 | 57.34 | 55.93 |
| Four or More | 7 | 42.89 | 43.19 | 42.82 |
| Multi-Carriers | 289 | 61.69 | 64.16 | 60.78 |
| Total | 400 | 62.70 | 64.93 | 61.80 |

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1979)

| <u>Dominant Carriers %/ Density</u> | <u>Number of Markets</u> | <u>Load Factor</u> | | |
|---|---|--------------------|---------------------------------|--------------|
| | | <u>Total</u> | <u>Carrier Hub-Dominant</u> | <u>Other</u> |
| 501 or More | | | | |
| Single Carrier | 15 | 75.43 | 77.23 | 71.35 |
| Two Carriers | 165 | 63.80 | 65.82 | 62.91 |
| Three Carriers | 84 | 64.10 | 64.11 | 62.91 |
| Four or More | 18 | 71.42 | 76.49 | 68.95 |
| Multi-Carriers | 267 | 64.64 | 66.34 | 63.97 |
| Total | 282 | 65.02 | 67.23 | 64.08 |
| Total | | | | |
| Single Carrier | 503 | 66.35 | 69.33 | 64.22 |
| Two Carriers | 615 | 62.68 | 65.12 | 61.69 |
| Three Carriers | 140 | 63.11 | 63.56 | 62.97 |
| Four or More | 29 | 70.41 | 75.77 | 67.84 |
| Multi-Carriers | 184 | 63.32 | 65.51 | 62.49 |
| Total | 1,287 | 63.73 | 66.24 | 62.68 |
| Hubs: | BOS ORD MDW DFW DEN DTW FLL HNL HOU IAH MCI LAS | | | |
| | LAX MEM MIA MSP LGA EWR JFK OAK MCO PHL PHX PIT | | | |
| | STL SLC SAN SFO SEA TPA IAD DCA | | | |

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1979.

NONSTOP LOAD FACTORS AT HIGHLY CONCENTRATED HUBS
FOR THE THIRD QUARTER OF 1984, 1986, AND 1988.

Table II-32

Objective: To determine how closely load factor changes can be tied to changes in concentration. The basis for this evaluation is third quarter load factors during the period when hub concentration greatly intensified, from 1984 through 1988, for each large and medium hub where a single carrier accounted for 75 percent or more of the hub's enplanements.

Data Sources: DOT's ER-586 service segment and schedule T-9 data.

Conclusions and Interpretation: Pittsburgh was highly concentrated throughout this period, and although USAir had a significant load factor advantage throughout, that advantage increased over time as USAir's dominance increased.

At Charlotte, Piedmont's load factor advantage increased dramatically in 1986, when its enplanements share exceeded 75 percent for the first time. Its load factor advantage dropped somewhat in 1988, but that appears to reflect that weaker, non-hubbing competitors exited a number of markets.

At Memphis, which was concentrated in 1984, moderately concentrated in 1986 and, highly concentrated in 1988, Republic/Northwest's load factor advantage quickly grew even though competitive load factors held up.

At Minneapolis, the dominant carrier's load factor advantage jumped after Minneapolis became a highly concentrated hub.

At St. Louis and Salt Lake City, where the changes in concentration are not quite as dramatic, the connection with changes in load factors are not as clear. Nevertheless, through all three periods at each hub the dominant carrier had a distinct load factor advantage.

At Cincinnati, where concentration decreased from 1984 to 1986, the dominant carrier's load factors went from higher than competitors' load factors to lower. Then in 1988, after Cincinnati became a highly concentrated hub, Delta's load factors far exceeded those of its competitors.

Finally, at Dayton, Piedmont's load factor advantage jumped in 1988, when its concentration exceeded 75 percent, not because its load factors increased, but because its competitors' load factors dropped substantially.

These comparisons show a strong connection between hub dominance and load factor differentials between the hub-dominant carriers and other carriers.

Also, these comparisons show a strong connection between degree of hub dominance and average load factors. At six of the eight hubs, hub-dominant carrier load factors increased as their dominance increased. Similarly, the dominant carriers' load factor tended to increase in monopoly markets and decrease in competitive markets. On average, this pushed total average load factors up because of the increasing number of monopoly points served and the decreasing number of competitive points served.

NONSTOP LOAD FACTORS AT HIGHLY CONCENTRATED HUBS
FOR THE THIRD QUARTER OF 1984, 1986, AND 1988.

Table II-32

Objective: To determine how closely load factor changes can be tied to changes in concentration. The basis for this evaluation is third quarter load factors during the period when hub concentration greatly intensified, from 1984 through 1988, for each large and medium hub where a single carrier accounted for 75 percent or more of the hub's enplanements.

Data Sources: DOT's ER-586 service segment and schedule T-9 data.

Conclusions and Interpretation: Pittsburgh was highly concentrated throughout this period, and although USAir had a significant load factor advantage throughout, that advantage increased over time as USAir's dominance increased.

At Charlotte, Piedmont's load factor advantage increased dramatically in 1986, when its enplanements share exceeded 75 percent for the first time. Its load factor advantage dropped somewhat in 1988, but that appears to reflect that weaker, non-hubbing competitors exited a number of markets.

At Memphis, which was concentrated in 1984, moderately concentrated in 1986 and, highly concentrated in 1988, Republic/Northwest's load factor advantage quickly grew even though competitive load factors held up.

At Minneapolis, the dominant carrier's load factor advantage jumped after Minneapolis became a highly concentrated hub.

At St. Louis and Salt Lake City, where the changes in concentration are not quite as dramatic, the connection with changes in load factors are not as clear. Nevertheless, through all three periods at each hub the dominant carrier had a distinct load factor advantage.

At Cincinnati, where concentration decreased from 1984 to 1986, the dominant carrier's load factors went from higher than competitors' load factors to lower. Then in 1988, after Cincinnati became a highly concentrated hub, Delta's load factors far exceeded those of its competitors.

Finally, at Dayton, Piedmont's load factor advantage jumped in 1988, when its concentration exceeded 75 percent, not because its load factors increased, but because its competitors' load factors dropped substantially.

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Also, these comparisons show a strong connection between degree of hub dominance and average load factors. At six of the eight hubs, hub-dominant carrier load factors increased as their dominance increased. Similarly, the dominant carriers' load factor tended to increase in monopoly markets and decrease in competitive markets. On average, this pushed total average load factors up because of the increasing number of monopoly points served and the decreasing number of competitive points served.

Nonstop Segment Load Factors
Highly Concentrated Domestic Large Hubs
(Third Quarters 1988, 1986, and 1984)

| Hub/Quarter/ Hub-Dominant Share | Number of Markets | Load Factor | | | Load Factor Differentials | |
|---------------------------------------|-------------------------|-------------|------------------|--------|--|--|
| | | Total | Carrier | | Hub-Dominant: Monopoly vs. Competitive | Hub-Dominant Total vs. Other Total |
| | | | Hub- Dominant | Other | | |
| <u>Pittsburgh</u> | | | | | | |
| 3rd Qtr. 1988 (75% or more): | | | | | | |
| Single Carrier | 58 | 72.10% | 72.31% | 19.58% | 9.12 pts. | 20.15 pts. |
| Multi-Carriers | 17 | 57.17 | 63.19 | 50.34 | | |
| Total | 75 | 66.43 | 70.07 | 49.92 | | |
| 3rd Qtr. 1986 (75% or more): | | | | | | |
| Single Carrier | 55 | 68.36 | 68.78 | 47.80 | (0.58) | 12.53 |
| Multi-Carriers | 12 | 62.93 | 69.36 | 56.97 | | |
| Total | 67 | 66.41 | 68.91 | 56.38 | | |
| 3rd Qtr. 1984 (75% or more): | | | | | | |
| Single Carrier | 49 | 62.50 | 63.22 | 39.89 | (0.25) | 8.75 |
| Multi-Carriers | 12 | 59.16 | 63.47 | 55.77 | | |
| Total | 61 | 61.18 | 63.28 | 54.53 | | |
| <u>Charlotte</u> | | | | | | |
| 3rd Qtr. 1988 (75% or more): | | | | | | |
| Single Carrier | 52 | 67.56 | 67.56 | 71.91 | 4.6 | 10.07 |
| Multi-Carriers | 9 | 60.04 | 62.16 | 56.57 | | |
| Total | 61 | 65.73 | 66.66 | 56.59 | | |
| 3rd Qtr. 1986 (75% or more): | | | | | | |
| Single Carrier | 33 | 65.81 | 66.06 | 41.93 | 3.15 | 12.31 |
| Multi-Carriers | 20 | 58.68 | 62.91 | 52.44 | | |
| Total | 53 | 61.56 | 64.57 | 52.26 | | |
| 3rd Qtr. 1984 (60 to 74.9%): | | | | | | |
| Single Carrier | 32 | 56.51 | 57.09 | 48.07 | 2.27 | 5.12 |
| Multi-Carriers | 16 | 53.23 | 54.82 | 51.54 | | |
| Total | 48 | 54.84 | 56.27 | 51.15 | | |

Nonstop Segment Load Factors
Highly Concentrated Domestic Large Hubs
(Third Quarters 1988, 1986, and 1984)

| Hub/Quarter/ Hub-Dominant Share | Number of Markets | Load Factor | | | Load Factor Differential | |
|---------------------------------------|-------------------------|-------------|------------------|--------|--|----------------------------------|
| | | Total | Carrier | | Hub-Dominant: Monopoly vs. Competitive | Hub-Domi Total vs Other To |
| | | | Hub- Dominant | Other | | |
| <u>Memphis</u> | | | | | | |
| 3rd Qtr. 1988 (75% or more): | | | | | | |
| Single Carrier | 49 | 63.77% | 63.84% | 61.29% | 8.87 pts. | |
| Multi-Carriers | 10 | 51.11 | 54.97 | 48.58 | | |
| Total | 59 | 61.19 | 63.00 | 50.41 | | 12.59 |
| 3rd Qtr. 1986 (60 to 74.9%): | | | | | | |
| Single Carrier | 30 | 55.28 | 55.75 | 45.96 | (3.39) | |
| Multi-Carriers | 18 | 51.96 | 59.14 | 45.84 | | |
| Total | 48 | 53.70 | 56.79 | 45.85 | | 10.94 |
| 3rd Qtr. 1984 (Less than 50%): | | | | | | |
| Single Carrier | 22 | 51.55 | 52.25 | 50.41 | 9.91 | |
| Multi-Carriers | 16 | 41.88 | 42.34 | 41.59 | | |
| Total | 38 | 45.77 | 47.49 | 44.19 | | 3.30 |
| <u>Minneapolis</u> | | | | | | |
| 3rd Qtr. 1988 (75% or more): | | | | | | |
| Single Carrier | 54 | 68.05 | 68.45 | 56.40 | 7.04 | |
| Multi-Carriers | 14 | 62.23 | 61.41 | 62.78 | | |
| Total | 68 | 66.40 | 67.45 | 61.98 | | 5.47 |
| 3rd Qtr. 1986 (Less than 50%): | | | | | | |
| Single Carrier | 28 | 60.22 | 59.76 | 60.59 | (2.38) | |
| Multi-Carriers | 29 | 62.82 | 62.14 | 63.71 | | |
| Total | 57 | 62.26 | 61.71 | 62.90 | | (1.19) |
| 3rd Qtr. 1984 (Less than 50%): | | | | | | |
| Single Carrier | 20 | 57.08 | 58.73 | 54.00 | 2.79 | |
| Multi-Carriers | 29 | 55.14 | 55.94 | 54.24 | | |
| Total | 49 | 55.45 | 56.47 | 54.21 | | 2.26 |

Nonstop Segment Load Factors
Highly Concentrated Domestic Large Hubs
(Third Quarters 1988, 1986, and 1984)

| Hub/Quarter/ Hub-Dominant Share | Number of Markets | Load Factor | | | Load Factor Differentials | |
|---------------------------------------|-------------------------|-------------|------------------|--------|--|--|
| | | Total | Carrier | | Hub-Dominant: Monopoly vs. Competitive | Hub-Dominant Total vs. Other Total |
| | | | Hub- Dominant | Other | | |
| <u>St. Louis</u> | | | | | | |
| 3rd Qtr. 1988 (75% or more): | | | | | | |
| Single Carrier | 57 | 65.75% | 65.97% | 36.70% | 6.32 pts. | 7.92 pts. |
| Multi-Carriers | 20 | 58.76 | 59.65 | 57.55 | | |
| Total | <u>77</u> | 63.59 | 64.67 | 56.75 | | |
| 3rd Qtr. 1986 (50 to 59.9%): | | | | | | |
| Single Carrier | 37 | 65.83 | 66.90 | 52.97 | 5.40 | 8.84 |
| Multi-Carriers | 35 | 59.01 | 61.50 | 56.24 | | |
| Total | <u>72</u> | 62.09 | 64.69 | 55.85 | | |
| 3rd Qtr. 1984 (50 to 59.9%): | | | | | | |
| Single Carrier | 42 | 59.78 | 61.29 | 51.44 | (0.29) | 7.56 |
| Multi-Carriers | 30 | 58.32 | 61.58 | 54.56 | | |
| Total | <u>72</u> | 59.00 | 61.41 | 53.85 | | |
| <u>Salt Lake City</u> | | | | | | |
| 3rd Qtr. 1988 (75% or more): | | | | | | |
| Single Carrier | 40 | 60.52 | 60.59 | 41.09 | 2.26 | 7.43 |
| Multi-Carriers | 10 | 55.55 | 58.33 | 52.77 | | |
| Total | <u>50</u> | 58.63 | 60.06 | 52.63 | | |
| 3rd Qtr. 1986 (75% or more): | | | | | | |
| Single Carrier | 33 | 61.89 | 62.84 | 45.20 | (3.10) | 7.65 |
| Multi-Carriers | 10 | 61.75 | 65.94 | 57.56 | | |
| Total | <u>43</u> | 61.82 | 63.81 | 56.16 | | |
| 3rd Qtr. 1984 (60 to 74.9%): | | | | | | |
| Single Carrier | 27 | 58.39 | 58.56 | 56.32 | (2.00) | 3.68 |
| Multi-Carriers | 11 | 57.71 | 60.56 | 55.39 | | |
| Total | <u>38</u> | 58.06 | 59.19 | 55.51 | | |

Nonstop Segment Load Factors
Highly Concentrated Domestic Large Hubs
(Third Quarters 1988, 1986, and 1984)

| Hub/Quarter/ Hub-Dominant Share | Number of Markets | Load Factor | | | Load Factor Differential | |
|---------------------------------------|-------------------------|-------------|------------------|--------|--|----------------------------------|
| | | Total | Carrier | | Hub-Dominant: Monopoly vs. Competitive | Hub-Dom: Total vs Other Tr |
| | | | Hub- Dominant | Other | | |
| <u>Cincinnati</u> | | | | | | |
| 3rd Qtr. 1988 (75% or more): | | | | | | |
| Single Carrier | 32 | 57.23% | 57.54% | 48.61% | 4.59 pts. | |
| Multi-Carriers | 16 | 50.55 | 52.95 | 47.75 | | |
| Total | 48 | 55.14 | 56.61 | 47.87 | | 8.74 |
| 3rd Qtr. 1986 (Less than 50%): | | | | | | |
| Single Carrier | 18 | 53.60 | 54.30 | 51.45 | 12.30 | |
| Multi-Carriers | 13 | 48.93 | 42.00 | 53.50 | | |
| Total | 31 | 51.61 | 50.84 | 52.78 | | (1.94) |
| 3rd Qtr. 1984 (50 to 59.9%): | | | | | | |
| Single Carrier | 18 | 51.31 | 51.01 | 52.72 | 8.83 | |
| Multi-Carriers | 12 | 43.10 | 42.18 | 43.69 | | |
| Total | 30 | 48.41 | 49.19 | 46.84 | | 2.35 |
| <u>Dayton</u> | | | | | | |
| 3rd Qtr. 1988 (75% or more): | | | | | | |
| Single Carrier | 31 | 56.55 | 57.81 | 48.26 | 0.0 | |
| Multi-Carriers | 1 | 40.33 | 57.81 | 40.33 | | |
| Total | 32 | 55.71 | 57.81 | 45.94 | | 11.87 |
| 3rd Qtr. 1986 (60 to 74.9%): | | | | | | |
| Single Carrier | 26 | 57.67 | 57.98 | 55.81 | 2.49 | |
| Multi-Carriers | 9 | 52.56 | 55.49 | 50.58 | | |
| Total | 35 | 56.54 | 57.69 | 53.00 | | 4.69 |
| 3rd Qtr. 1984 (60 to 74.9%): | | | | | | |
| Single Carrier | 22 | 49.18 | 46.48 | 57.30 | 2.34 | |
| Multi-Carriers | 4 | 45.63 | 48.82 | 40.40 | | |
| Total | 26 | 48.66 | 46.77 | 53.83 | | (7.06) |

SOURCE: ER-586 Service Segment and T-9 Data for Quarter Ended September 30, 1988, 1986, and 1984

